HONDA English Factory Service Manual

ACTY TRUCK
ACTY VAN

HONDA SERIES

Carbureted Vehicles

660cc Engine
E07A

2WD & 4WD
1989~1997 Models
Series Models
V-HA3
V-HA4
V-HH3
V-HH4

Honda Acty English Factory Service Manual

Carbureted Vehicles

Acty Truck - Acty Van - Street Van
660cc
2WD &4WD

AT-MT Models

Model Series
V-HA3, V-HA4, V-HH3 & V-HH4
1989~1998

James Danko
Yokohama, Japan

Edited By: James L. Danko

Artwork: James L. Danko© 2008

Layout By: James L. Danko

Computer Assistance: Yoshiro (www.yoshiro.com)

Printed in U.S.A

Publisher LuLu.com

ISBN: 978-0-557-02799-6

Second Edition 2008

Yokohama Motors Japan is a solely owned division of Nippon Security Inc. Yokohama Motors is a licensed new & used import/export automotive dealer based in Yokohama Japan. For more information please visit www.yokohamamotors.com

All translations from original Japanese test to English completed by James Danko.

Disclaimer: All translations from one language to another can involve technical errors. The author has found mistakes in the original Japanese text. The best suitable English vocabulary has been chosen by the author.

Credits: I would like to thank the Honda Motors Corporation (Japan) for their part in supplying required information.

Credits: I would like to thank Yoshiro for all his computer technology to make these books happen. His computer graphics and technology is simply the best. www.yoshiro.com

Introduction

Due to the high request for English version manuals on Japanese mini trucks & Vans, we are publishing wide variety information to provide the mini truck community with the ability to maintain their vehicles.

Japanese mini tucks & vans are produced only for the Japanese market. Therefore, all original manuals are only available in Japanese.

Service manuals are not sold to the public in Japan, as in many countries. You must be a new car dealer to receive them. We have a few hundred in stock. We do not sell manuals from our own library

Translating from Japanese is by no way an easy task. It is a very time consuming effort. English Terms and phrases are made as clear as possible for peoples of all countries to read easily. Hundreds of diagrams make repairs simpler to get the job done.

This book or manual is for the professional mechanic. Simple items as how to change a spark plug, or an air-filter are not in this book. It is written in Factory Service Manual style. It is full of diagrams and schematics that are easily understood by a professional mechanic. How to do an engine overhaul using the correct parts sizes, measurements, torque, etc. Complete diagrams of all major parts, including body. You will have the same information as the Honda Factory techs have. This book is written by a mechanic, for mechanics.

We have manuals for all Japanese manufactures. It's a time consuming process, please check our web page frequently as we post more information.

For more information please visit our home page at www.yokohamamotors.com

Comments or information on this book please email to info@yokohamamotors.com

Note: Large Print Used for The Vision Impaired.

Contents

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Chapter 6

Chapter 9

Chapter 10

Chapter 11

Chapter 12

Chapter 13

Chapter 1

Specifications & Body Schematics

- Acty Truck Specifications Chart
- Acty Van & Acty Street Versions
- Vehicle Identification & Code Locations
- Lift Points
- Jack Points
- Jack Stands
- Towing
- Body Schematics Truck M-HA3 M-HA4
- Body Schematics Van M-HA3 M-HA4
- E07A Engine (HP) & Torque Curves
- Truck Frame Specifications (Diagram)
- Van Frame Specifications (Diagram)

Acty Vehicle Series

Acty Truck

Acty Van

Street

Acty Truck

Series		Acty					
Models		M-HA3				M-HA4	
Engine		E07A				E07A	
Size (cm³)		656(cc)				656	
Drive		2 WD				4 WD	
	Type	STD	STD	SDX	SDX-II	SDX	ATTACK
Transmission	4 MT	○	○	○			
	5 MT				○		
	MT 4 DUL/UR						◎
	MT 5 4WD					○	
	AT 3 Speed			◎			
Dealer Option AC		◎	◎	◎	◎	◎	◎
Factory Installed AC				◎	◎	◎	

○ Standard Availability

◎ Option

Options

Acty Van

Model		Acty Van							
Use		Route Van							
Series		M-HH3					M-HH4		
Engine		E07A					E07A		
Size (cc)		656					656		
Drive		2WD					4WD		
Type		STD	PRO-B	PRO-T	SDX	SDX-2	PRO-B	PRO-T	SDX
Trans	MT 4 Speed	○	○	○	○				
	MT 5 Speed					○			
	MT 5 4WD						○	○	○
	AT 3 Speed				○				
Dealer Cooler Option		●	●	●	●	●	●	●	●
Factory AC					●	●			●
Rear Wiper		●		●	●*	●	●		●*1	●
Delay Wiper Option		●		●	●*	●	●		●*1	●

○ Standard ● Option

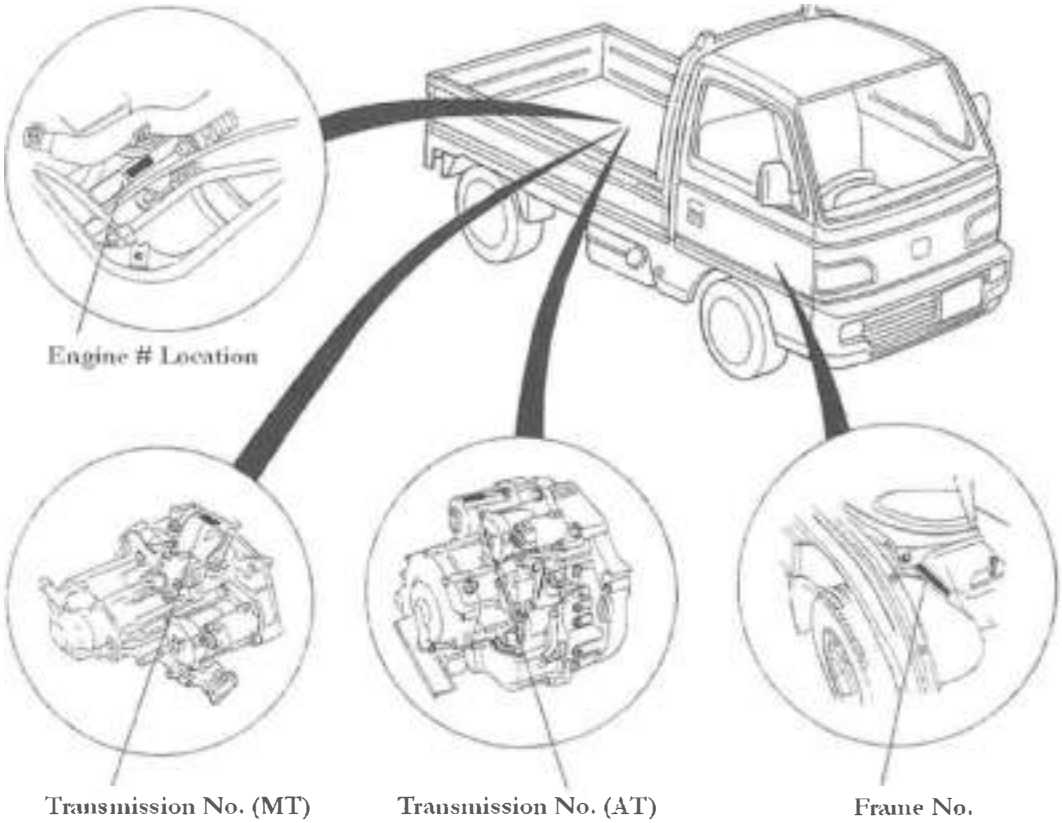
Acty "Street" Van

Model		Acty Street								
Use		Route Van								
Series		M-HH3						M-HH4		
Engine		E07A						E07A		
Size (cc)		656						656		
Drive		2WD						4WD		
Type		L		G		EX		L	G	EX
Trans	MT 5 Speed	○		○		○				
	MT 5 4WD							○	○	○
	AT 3 Speed		○		○		○			
Factory A/C		●	●	●	●	●	●	●	●	●
Stereo				○	○				○	
Sun Roof						○	○			○
Rear Wiper		○	○	○	○	○	○	○	○	○
Delay Rear Wiper		○	○	○	○	○	○	○	○	○
Aluminum Wheels				●	●	●	●		●	●
Dealer Option		○	○	○	○	○	○	○	○	○

Vehicle Identification

Note: SR=Series

	Doors		Series	Frame #	Type		Engine Series	Engine No. #	Manual (MT) SR	Manual (MT) No.	(AT) SR	(AT) No.
ACTY	TRUCK	3 WAY 2D	M-HA3	HA3-1000001~	STD	2WD	E07A	E07A-1000001~	Z8	Z8-1000001~		
					STD						Z5	Z5-1000001~
					SDX				Z8	Z8-5000001~		
					SDX-II							
			M-HA4	HA4-1000001~	ATTACK	4WD			Z9	Z9-1000001~		
					SDX							
	VAN	5D	M-HH3	HH3-1000001~	STD PRO-B PRO-T	2WD			Z8	Z8-1000001~		
					SDX						Z5	Z5-1000001~
					SDX-II				Z8	Z8-5000001~		
			M-HH4	HH4-1000001~	PRO-B PRO-T SDX	4WD			Z9	Z9-1000001~		
	STREET		M-HH3	HH3-1000001~	L G EX	2WD			Z8	Z8-5000001~	Z5	Z5-1000001~
			M-HH4	HH4-1000001~	L G EX	4WD			Z9	Z9-1000001~		

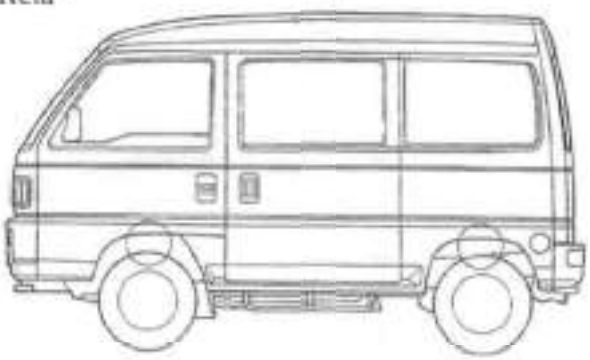


Lift Points

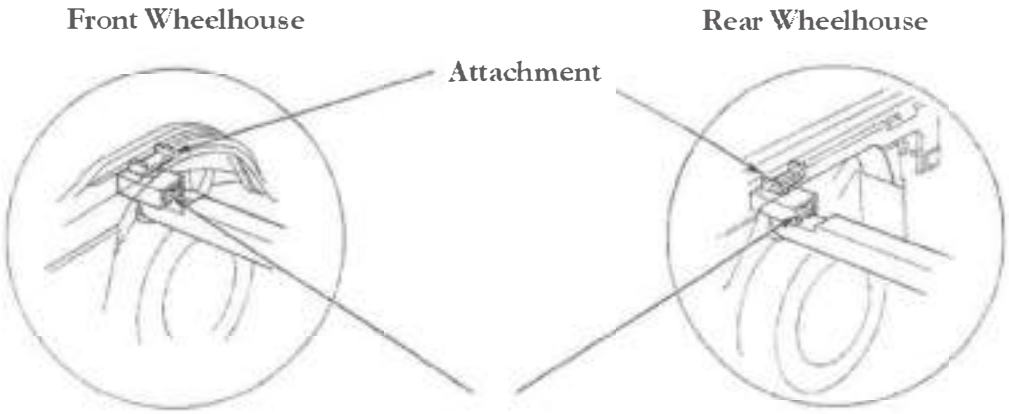
Truck

Front Rear

Van

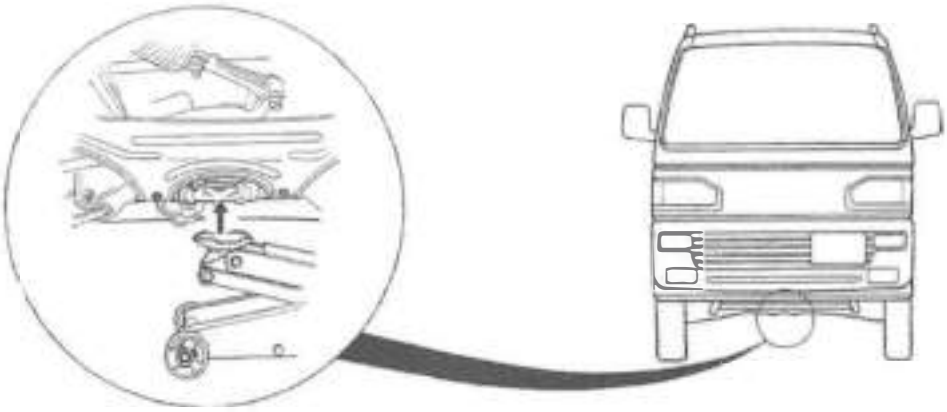


Front Rear

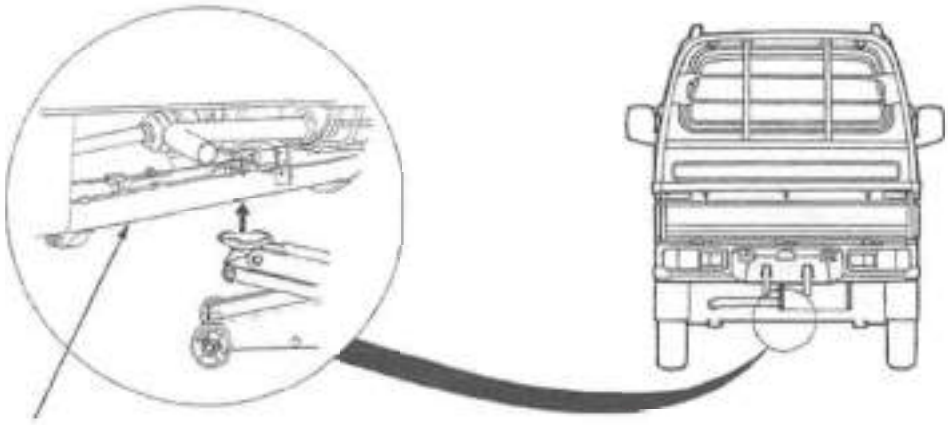


Jack Up Points

Front

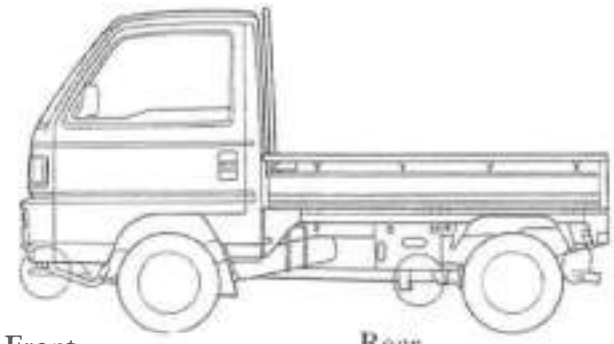


Rear

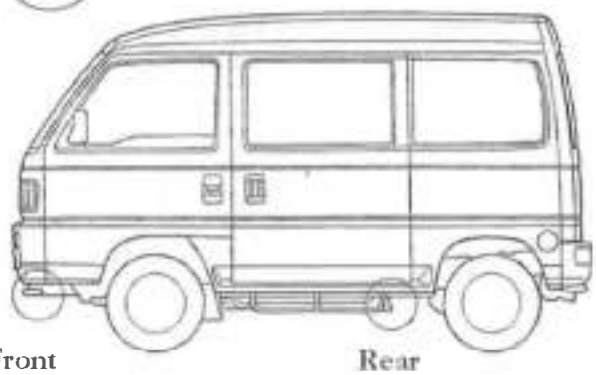


Rear Axel Beam

Jack Stand Locations

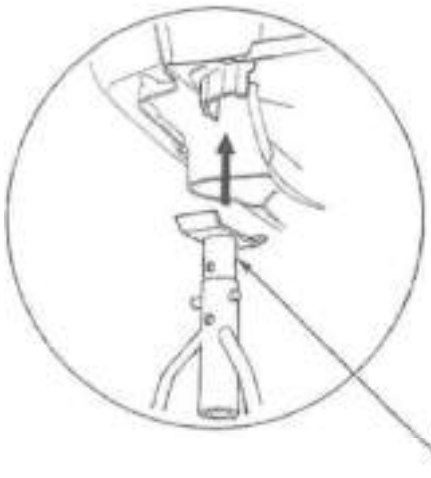


Front Rear

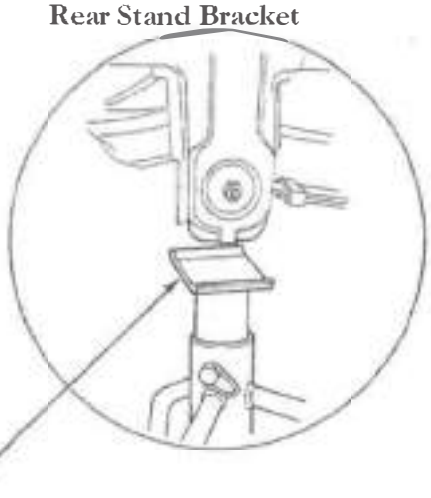


Front Rear

Front Stand Corner



Rear Stand Bracket



Use This Type Jack Stand Head

Towing Attachment Point

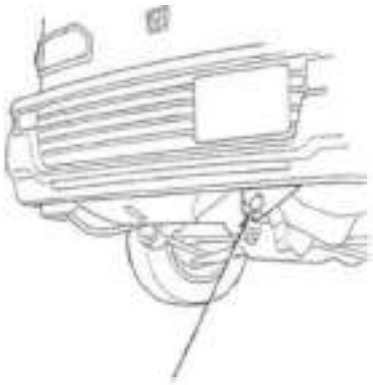
Note: Make Sure Parking Brake is Released During Towing.

Note: Make Sure Vehicle is in Nuetral Posistion

Caution: Full Time 4WD Should Not be Towed Over 25MPH (40KPH)

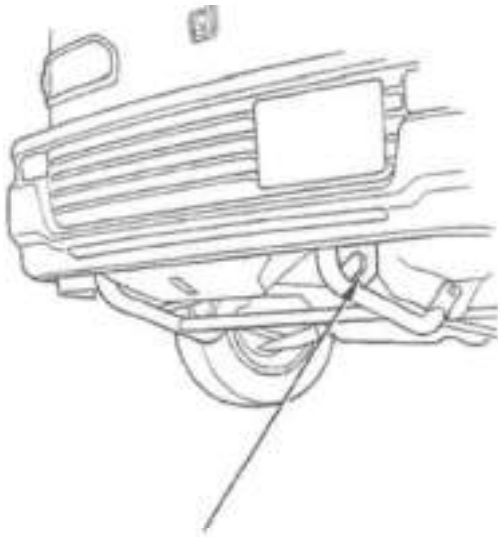
Cuation: Full Time 4WD Should be Trailered For Long Distance

2WD



Attchment Point (Hook)

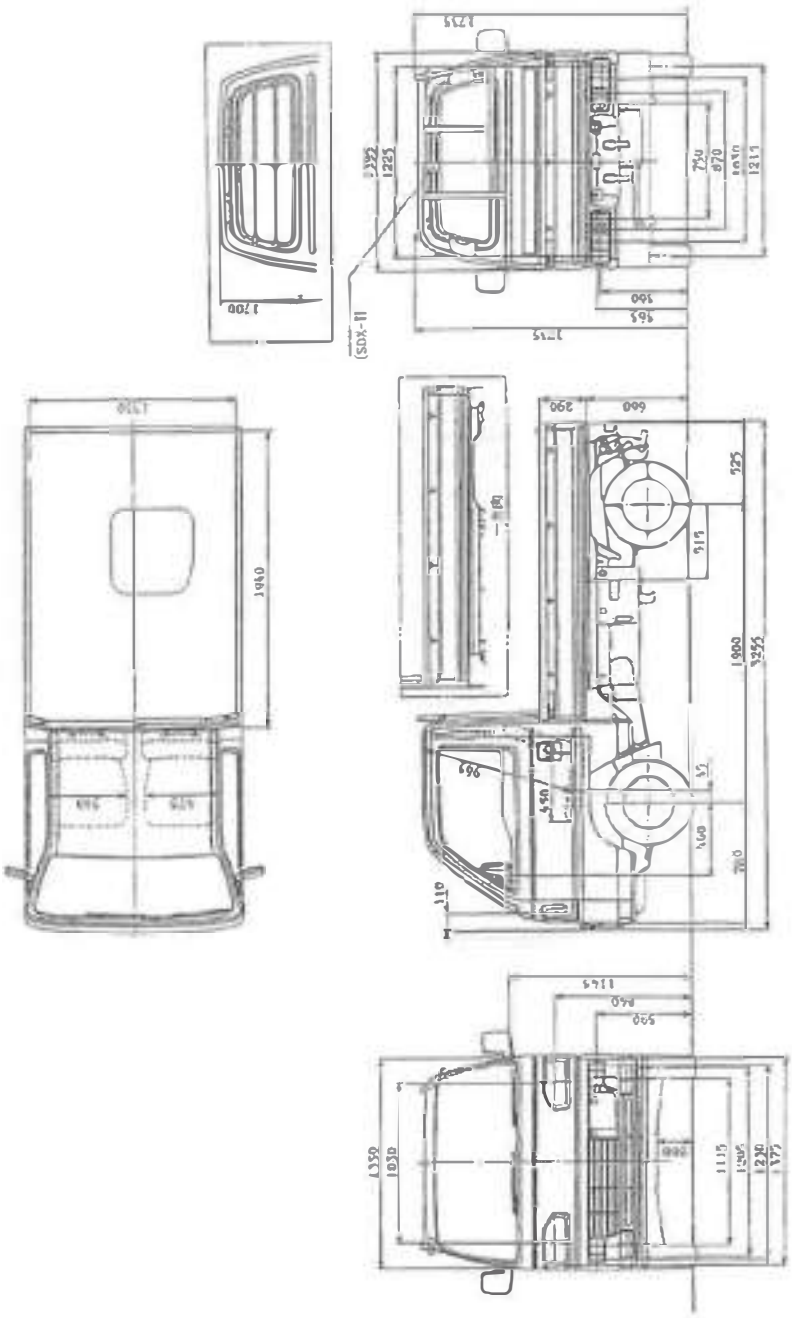
4WD



Attachmnet Point (Hook)

Body Schematic

Truck
Series: M-HA3
L=mm

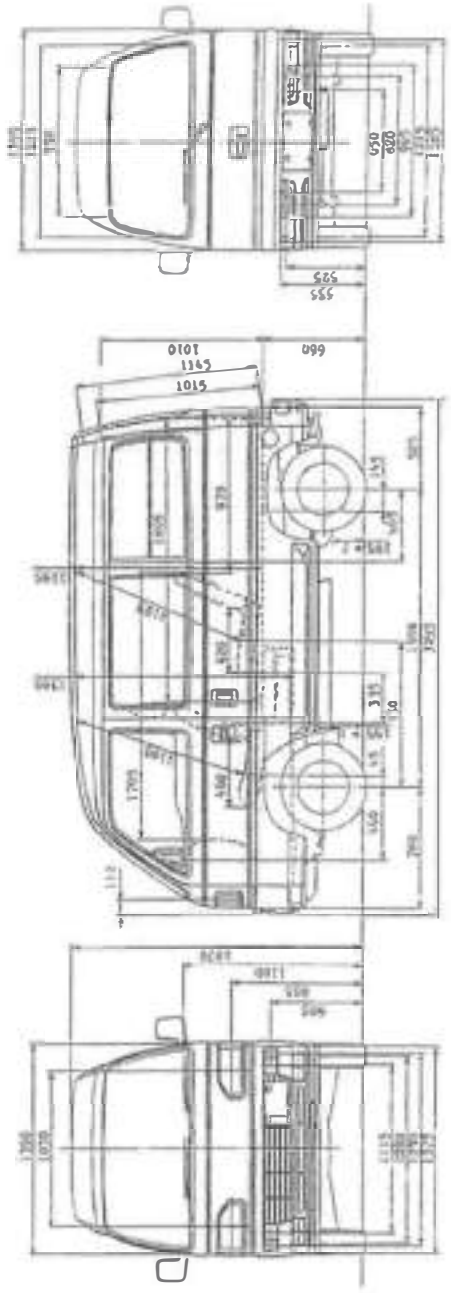


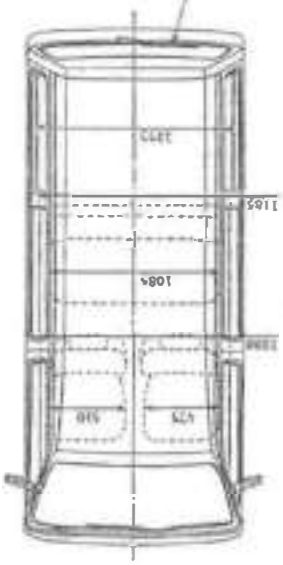
Body Schematic

Truck
Series: M-HA4
L=(mm)

Body Schematic

Van
Series: M-HH3
Acty STD, SDX, SDX-2

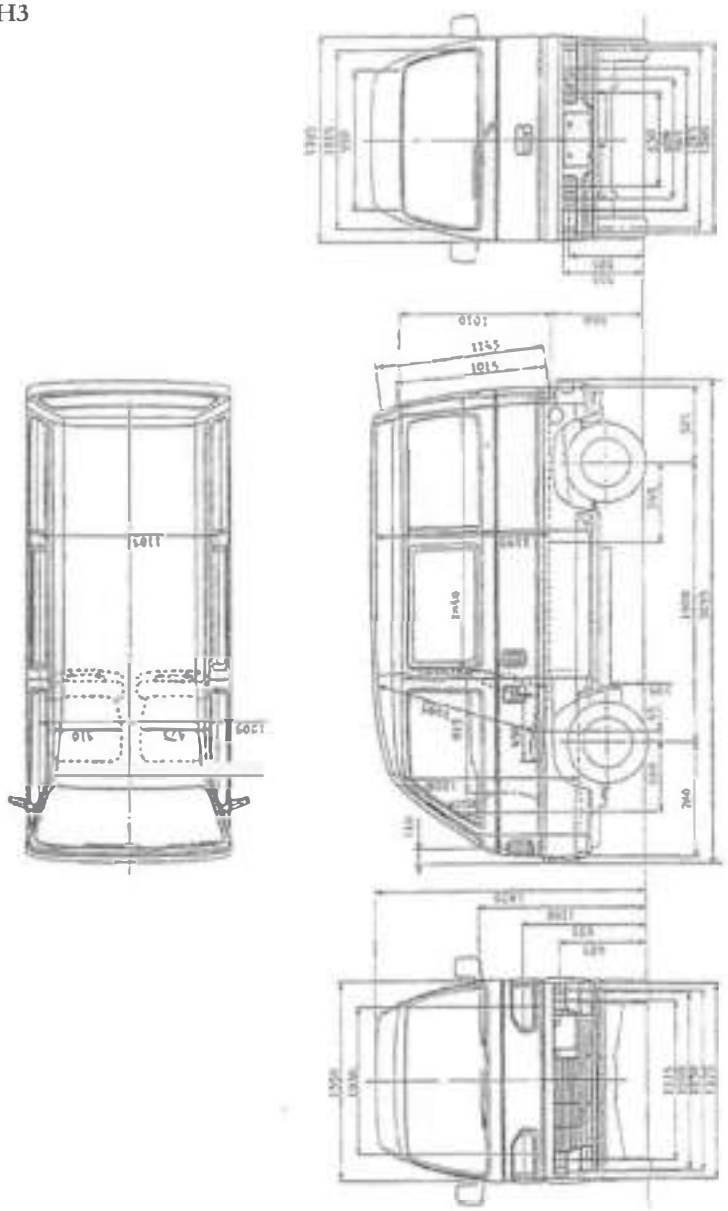




Note: *1=5MT
*2=3AT

Body Schematic

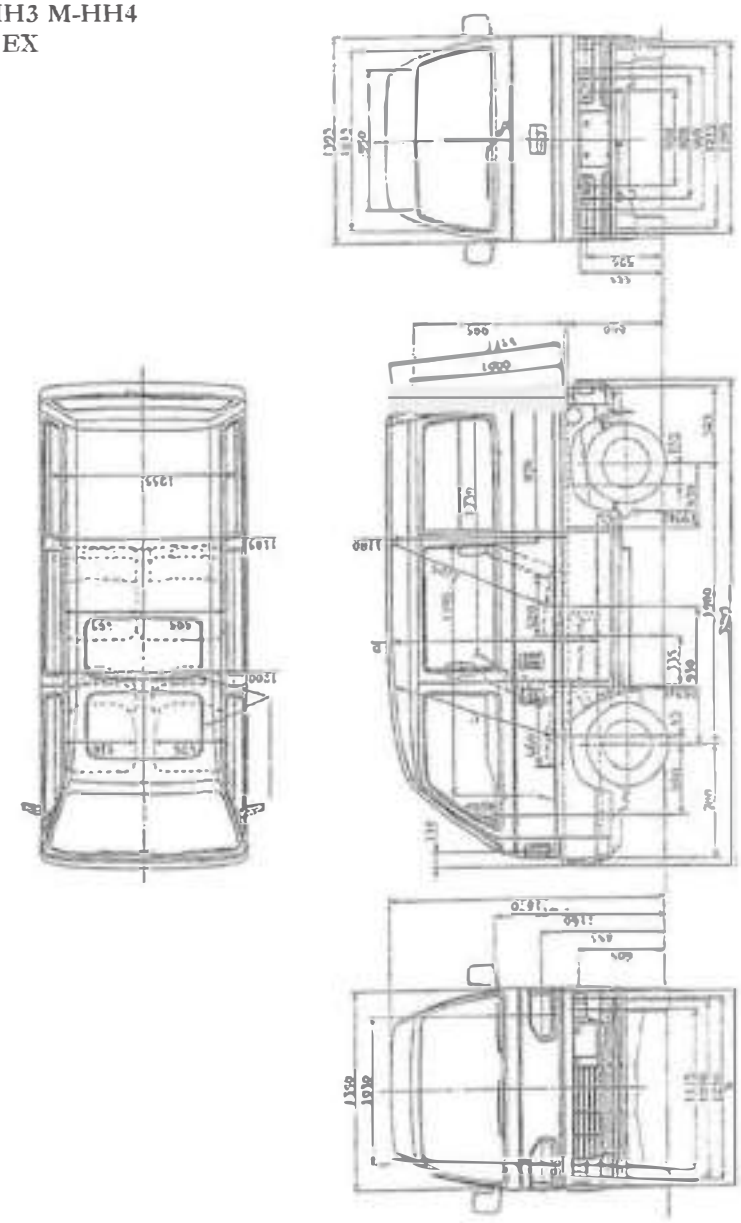
Van
Series: M-HH3
Acty PRO-B



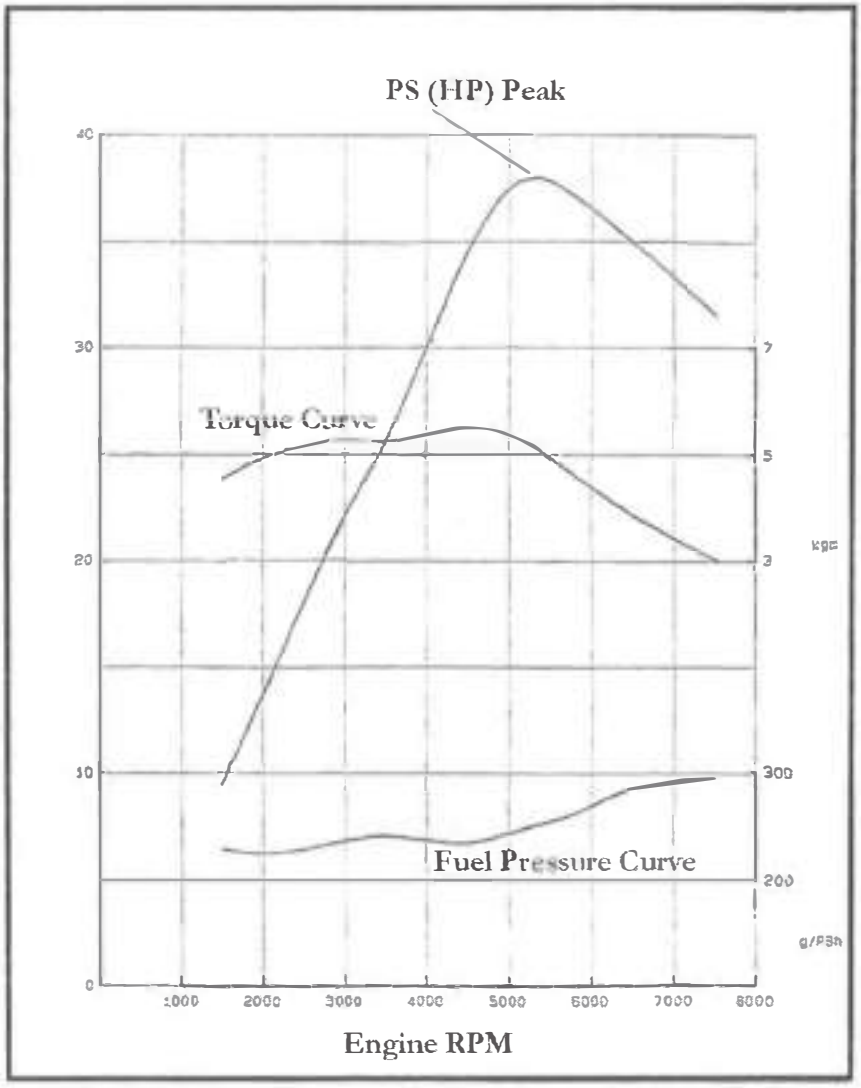
Body Schematic

Van
Series: M-HH3 M-HH4
Street L, G, EX

*1 =5MT
*2 =3AT



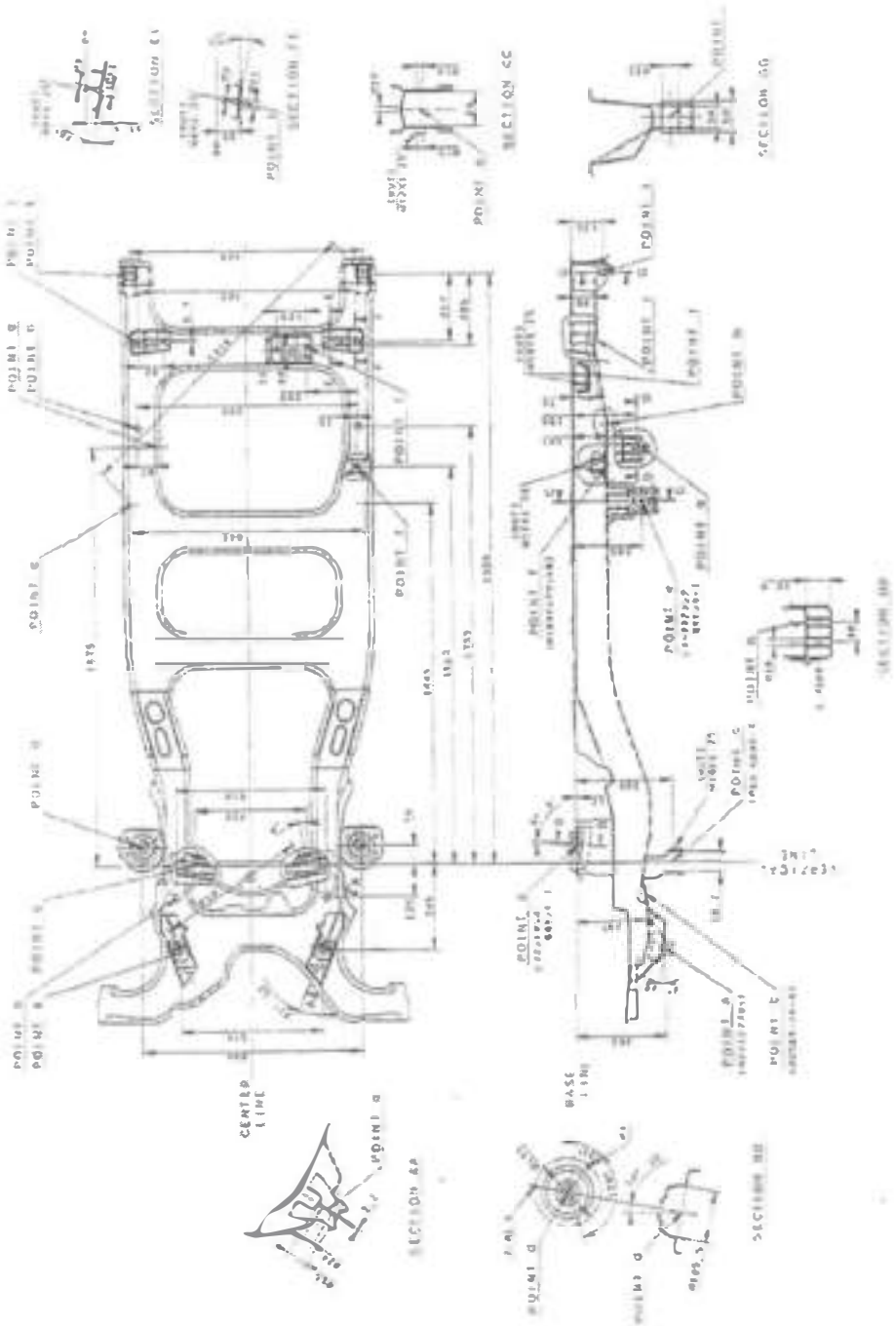
Honda Acty Truck



Torque Rating: kgm
PS (HP) (HP=Max 38.8HP)
Fuel Curve= g/PSh
Yokohamamotors.com Dynamometer Test 2008/5

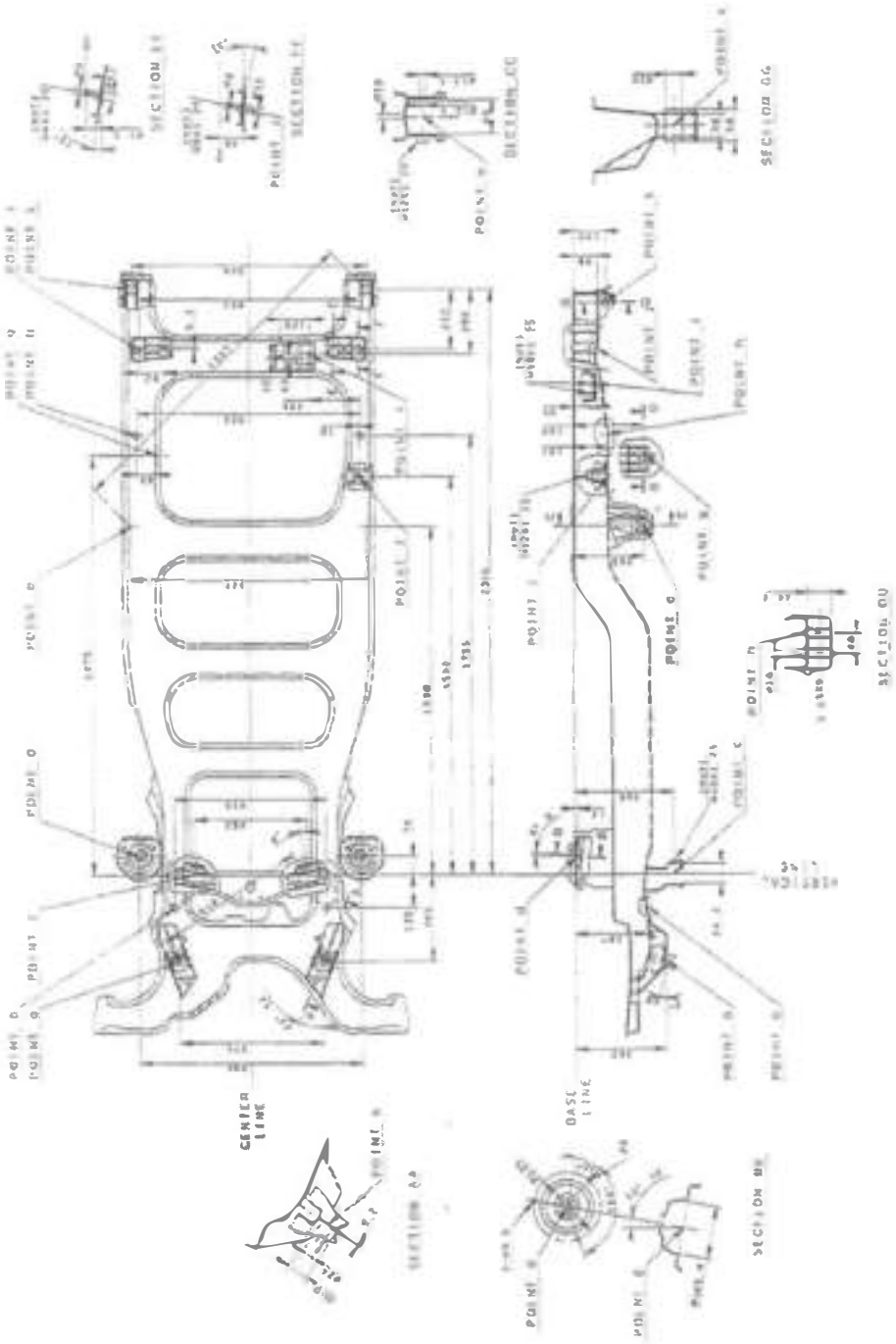
Truck Frame Specifications

Series: M-HA3 & HA 4



Note: Original too large to clearly fit on this page. If trouble reading please email any questions.

Van Frame Specifications
Series: M-HH3 & HH4
Van & Street



Chapter 2

Service Data Specifications

- Engine Specifications
- Fuel & Emission Control
- Clutch System
- Manual Transmission Clearances (2WD)
- Manual Transmission Clearances (4WD)
- Manual Transmission Clearances (4WD UL/UR)
- Front Differential Specifications (4WD)
- Steering
- Suspension & Alignment Specifications
- Brakes
- Air Conditioner (AC)
- Starter Motor
- Ignition Timing & Spark Plugs

Service Data

Engine

Part Name	Item		Benchmark	Limit Value
Engine	Compress Pressure(kg/cm^2 -rpm)		14.0-250	9.5-250
Cylinder Head	Buckle surface between head and block		-	0.05
	Height		94.25-94.35	-
Camshaft	Directional Shaft		0.05-0.15	0.50
	Oil Clearance		0.050-0.089	0.150
	Distortion		0.015	0.030
	Height of Cam	IN	34.799	-
		EX	33.944	-
Valve	Valve Clearance (Cold)	IN	0.18-0.22	-
		EX	0.25-0.29	-
	Stem External Diameter	IN	5.48-5.49	5.45
		EX	5.45-5.46	5.42
	Stem and Guide Clearance	IN	0.02-0.05	0.08
		EX	0.05-0.08	0.11
Valve Seat	Finishing Seat Width	IN	0.95-1.25	1.60
		EX	1.15-1.45	1.80
	Valve Seat Sunken(Installation Height)	IN	45.76-46.24	46.49
		EX	46.26-43.74	43.99
Valve Spring	Free	IN	46.66	45.89
		EX	47.15	46.36
Valve Guide	Valve Guide Internal Diameter	IN,EX	5.51-5.53	5.55
Rocker Arm	Rocker Arm and Rocker Arm shaft Clearance	IN	0.017-0.050	0.080
		EX	0.018-0.054	0.080
Cylinder	Buckle surface between head and block		not over0.07	0.10
	Internal Diameter		66.00-66.02	66.07
	Error Internal Diameter		-	0.05
	Cylinder expansion limit		-	0.50
Piston	Skirt External Diameter at 20mm from Bottom		65.98-65.99	65.98
	Gap between Cylinder		0.010-0.040	0.040
	Ring width	Top	1.225-1.235	1.25
		Second	1.225-1.235	1.25
		Oil	2.805-2.825	2.850
Piston Ring	Gap between Piston	Top	0.040-0.065	0.130
		Second	0.035-0.060	0.130
	Joint Gap	Top	0.15-0.30	0.60
		Second	0.30-0.45	0.60
		Oil	0.2-0.5	0.60

Piston Pin	External Diameter	15.994-16.000	-
	Piston Pin and Piston Pin Clearance	0.010-0.022	-
Con Rod	Piston Pin Injection	0.013-0.036	-
	Piston Pin hole	15.964-15.981	-
	Large End directional Shaft	0.15-0.30	0.40
	Parallelism Large End and Small End	over 0.12/100	0.15/100

Part Name	Item		Benchmark	Limit Value
Crankshaft	Journal Radius		39.976-40.000	-
	Round-Out Limit		Not over 0.0025	0.010
	Pin Radius		35.976-36.000	-
	Circularity		Not over 0.0025	0.010
	Shaft Directional Backlash		0.10-0.35	0.45
	Distortion		Not over 0.015	0.030
Bearing	Journal Oil Clearance		0.020-0.038	0.050
	Pin Oil Clearance		0.020-0.038	0.050
Recommended Engine Oil	APISF,10W-30 APISE	Oil (ℓ)	Disassemble	3.0
			Exchange	2.7(With Oil Filter)
				2.5
Oil Pump	Structure		Trochoid Pump	
	Rating oil feed(ℓ/min-rpm)		25-6.000	-
	Inner & Outer Chip Clearance		0.14	0.20
	Outer & Body Radius Clearance		0.100-0.175	0.200
	Rotor & Body Side Clearance		0.03-0.08	0.15
Relief Bulb	Structure		Plunger	
	Hydraulic Adjustment[kg/cm²]	Idling 80℃	Not under 0.7	-
		80℃ 3000 r p m	Not under 3.5	-
Radiator			MT	AT
	Cooling Water(ℓ)	Tank (Include Reserve Tank)	6.5	7.1
		Include Reserve Tank 0.9ℓ) No Rear Heater	6.5	7.2
		Include Reserve Tank 0.9ℓ) With Rear Heater	6.7	7.4
	Radiator Limit (ℓ)(Include Reserve Tank)		4.0	4.7
	Cap Valve Pressure(kg/Cm²)		0.75-1.05	
Thermostat			Benchmark	
	Starting Temperature (℃) (0.35mmLifting)		76-80	
	Temperature		90	
	Full Bore lift		Not under 8	
Water Pump	Crankshaft rotation ratio		0.952	
	Water Conveyance(ℓ/min-rpm)		69-5.300	
Fan	Temperature Thermo switch (ON)		87-93	
	Temperature Thermo switch (OFF)		82-88	

Fuel & Emission Control

Part Name	Item			Benchmark	
Fuel Pump	Discharge[cc/min]	Truck		400	
		Van, Street	MT	350	
			AT	400	
	Discharge Pressure[kg/cm2]	Truck		0.06-0.10	
		Van, Street	MT	0.08-0.12	
			AT	0.06-0.10	
Fuel Tank	Content(ℓ)			37	
Fast Idle RPM	(RPM)			AC 1200RPM	
Idling(Non Load)	(RPM)			MT:1.000±50 1.150±50 (UL/UR)	AT:950±50 (D Range)
Idling Emission(Non Load)	CO Concentration (%)			Below 3.0	
	HC Concentration[ppm]			Below 900ppm	

Clutch

Part Name	Item	Benchmark	Limit Value
Clutch Pedal	All Stroke	130-135	-
	Backlash	15-25	-
	Gap (Gap between Floor)	Not Under 79	-
Clutch Flywheel	Disk Surface Fluctuation	Under 0.05	0.15
Clutch Friction Disk	Surface Fluctuation	Under 0.6	1.00
	Galling (depth to rivet head)	Not Under1.3	0.20
	Disk thickness	8.35-9.15	5.75
Clutch Cover Assembly	Pressure Disk Face Flatness	Under0.03	0.15
	Diaphragm Spring	Under0.8	1.00
Release Bearing	Internal Diameter	29.030-29.150	29.250
	Gap Between Guide Shaft	0.080-0.233	0.300

Manual Transmission 2WD

Part Name	Item			Benchmark	Limit
Recommended Transmission Oil	APISE,10W-30W or MTF		Oil(ℓ)	Dry	1.3
				change	1.2
Main Shaft	Directional Shaft			0.10-0.15	Shim adjust
	Ball Bearing External Diameter	A(Clutch Case Side)		21.940-21.960	21.903
		C(Transmission Case Side)		19.987-20.000	19.940
	B(Needle Bearing)External Diameter			24.987-25.000	24.930
	Distortion			Under 0.02	0.05
Counter Shaft	Directional Shaft			0.05-0.21	0.30
	C(Ball Bearing) External Diameter			19.987-20.000	19.930
	A(Clutch Case Needle Bearing)Diameter			24.9935-25.0065	24.940
	B(Needle Bearing)External Diameter			24.987-25.000	24.930
	Distortion			Under 0.02	0.05
Main 3rd Gear	Directional Shaft Gap			0.05-0.22	0.31
	Gear Height			28.45-28.50	-
	Internal Diameter			30.007-30.020	30.070
Main 4th Gear	Directional Shaft Gap			0.05-0.20	0.29
	Gear Height			27.45-27.50	-
	Internal Diameter			35.009-35.025	35.080
Main 5th Gear	Directional Shaft Gap			0.05-0.20	0.29
	Gear Height			25.45-25.50	-
	Internal Diameter			34.009-34.025	34.080
Counter 1st Gear	Directional Shaft Gap			0.04-0.12	0.18
	Gear Height			31.45-31.50	-
	Internal Diameter			31.009-31.025	31.080
Counter 2nd Gear	Directional Shaft Gap			0.05-0.10	0.18
	Gear Height			32.45-32.50	-
	Internal Diameter			38.009-38.025	38.080
Main Shaft Distance	External Diameter			29.987-30.000	29.930
	Internal Diameter			23.202-23.212	23.260
	Width		5speed	48.95-49.05	-
			4speed	63.95-64.05	-
Counter Shaft Distance	External Diameter			32.989-33.000	-
	Internal Diameter			26.980-26.991	-
	Width			30.5	-
Reverse Idle Gear	Internal Diameter			15.016-15.043	-
	Gap of Shaft			0.036-0.084	-

2WD (continued)

Part Name	Item		Benchmark	Limit
Blocking Ring	Gap between Gear		0.85-1.10	0.4
Shift Folk	Nail Thickness	1st-2nd	9.4-9.5	9.0
		3rd-4th	7.9-8.0	7.5
		5th	6.4-6.5	6.0
	Gap between Synchronizer Sleeve		0.45-0.65	1.00
	Internal Diameter	1st-2nd	12.000-12.043	-
		3rd-4th	12.000-12.068	-
		5th	12.000-12.043	-
	Gap between Shift Folk Shaft	1st-2nd	0.04-0.113	-
		3rd-4th	0.040-0.138	-
		5th	0.040-0.113	-
	Shift Arm B Sliding Groove Width		13.2-13.4	-
Reverse Shift Folk	Nail Groove Width		11.5-11.8	-
	Gap between Reverse Idle Gear		0.224-0.819	1.5
	L Groove Width		7.05-7.25	-
	Gap between Reverse Shift Piece		0.05-0.35	0.50
Shift Arm B	Sliding Diameter		13.973-13.986	-
	Shift Folk, Reverse Shift Piece		0.003-0.034	0.06
	Gap between Sliding and Select Arm		0.01-0.08	0.10
Reverse Shift Piece	Shift Arm B Sliding Groove Width		13.2-13.4	-
	Reverse Shift Folk Sliding External Diameter		6.9-7.0	-
Select Arm	Nail Width		11.00-11.03	-
	Gap Between Shift Arm B Sliding		0.01-0.08	0.10
Final Driven Gear	Backlash		0.087-0.146	0.200
Diff Case	Pinion Shaft Internal Diameter		15.000-15.018	-
	Gap between Pinion Shaft Internal Diameter		0.016-0.052	0.100
	Drive Shaft Internal Diameter		26.005-26.025	-
	Gap between Drive Shaft Internal Diameter		0.025-0.066	0.120
Diff Pinion Gear	Backlash		0.05-0.15	Use Washer 7 to Adjust
	Internal Diameter		15.042-15.066	-
	Gap between Pinion Shaft		0.058-0.100	0.15
Gap between Snap Ring and Bearing Outer Race			0-0.15	Use Snap Ling to Adjust

Manual Transmission 4WD

Part Name	Item			Benchmark		Limit
Recommended Transmission Oil	APISE,10W-30 or MTF		Oil(ℓ)	5 MT	Assemble	1.3
					Exchange	1.2
				4MT UL/UR	Assemble	1.5
					Exchange	1.4
Main Shaft	Directional Shaft			0.10-0.15		Shim to Adjust
	Ball Bearing External Diameter	A(Clutch Case Side)		21.940-21.960		21.903
		C(Transmission Case Side)		19.987-20.000		19.940
	B(Needle Bearing)External Diameter			24.987-25.000		24.930
	Bend Limit			Under 0.02		0.05
Counter Shaft	Directional Shaft			0.05-0.21		0.30
	C(Ball Bearing)External Diameter			20.987-21.000		20.930
	A(Clutch Case Needle Bearing)External Diameter			24.9935-25.0065		24.940
	B(Needle Bearing)External Diameter			24.987-25.000		24.930
	Bend Limit			Under 0.02		0.05
Main 3rd Gear	Gap Directional Shaft			0.05-0.22		0.31
	Gear Height			28.45-28.50		-
	Internal Diameter			30.007-30.020		30.070
Main 4th Gear	Gap Directional Shaft			0.05-0.20		0.29
	Gear Height			27.45-27.50		-
	Internal Diameter			35.009-35.025		35.080
Main 5th Gear	Gap Directional Shaft			0.05-0.20		0.29
	Gear Height			25.45-25.50		-
	Internal Diameter			34.009-34.025		34.080
Counter 1st Gear	Gap Directional Shaft			0.04-0.12		0.18
	Gear Height			31.45-31.50		-
	Internal Diameter			31.009-31.025		31.080
Counter 2nd Gear	Gap Directional Shaft			0.05-0.10		0.18
	Gear Height			32.45-32.50		-
	Internal Diameter			38.009-38.025		38.080
Main Shaft Distance Color	External Diameter			29.987-30.000		29.930
	Internal Diameter			23.202-23.212		23.260

	Width	5speed	48.95-49.05	-
		4speed	63.95-64.05	-
Counter Shaft Distance Color	External Diameter		32.989-33.000	-
	Internal Diameter		26.980-26.991	-
	Width		30.5	-
Reverse Idle Gear	Internal Diameter		15.016-15.043	-
	Gap of Shaft		0.036-0.084	-

Part Name	Item		Benchmark	Limit
Blocking Ring	Gap between Gear(Thrust Ring onto Gear)		0.85-1.10	0.4
Shift Folk	Nail Thickness	1st-2nd	9.4-9.5	9.0
		3rd-4th	7.9-8.0	7.5
		5th	6.4-6.5	6.0
	Gap between Synchronizer Sleeve		0.45-0.65	1.00
	Internal Diameter	1st-2nd	12.000-12.043	-
		3rd-4th	12.000-12.068	-
		5th	12.000-12.043	-
	Gap between Shift Folk Shaft	1st-2nd	0.04-0.113	-
		3rd-4th	0.040-0.138	-
		5th	0.040-0.113	-
	Shift Arm B Sliding Groove Width		13.2-13.4	-
Reverse Shift Folk	Nail Groove Width		11.5-11.8	-
	Gap between Reverse Idle Gear		0.224-0.819	1.5
	L Groove Width		7.05-7.25	-
	Gap between Reverse Shift Piece		0.05-0.35	0.50
Shift Arm B	Sliding Diameter		13.973-13.986	-
	Shift Folk, Reverse Shift Piece		0.003-0.034	0.06
	Gap between Sliding and Select Arm		0.01-0.08	0.10
Reverse Shift Piece	Shift Arm B Sliding Groove Width		13.2-13.4	-
	Reverse Shift Folk Sliding External Diameter		6.9-7.0	-
Select Arm	Nail Width		11.00-11.03	-
	Gap Between Shift Arm B Sliding		0.01-0.08	0.10
Final Driven Gear	Backlash		0.087-0.146	0.200
Diff Case	Pinion Shaft Internal Diameter		15.000-15.018	-
	Gap between Pinion Shaft Internal Diameter		0.016-0.052	0.100
	Drive Shaft Internal Diameter		26.005-26.025	-

Diff Pinion Gear	Backlash	0.05-0.15	Use Washer7 to Adjust
	Internal Diameter	15.042-15.066	-
	Gap between Pinion Shaft	0.058-0.100	0.15
Gap between Snap Ring and Bearing Outer Race		0-0.15	Use Snap Ring to Adjust

Part Name	Item	Benchmark	Limit
Companion Flange Shaft	A(Ball Bearing)External Diameter	27.980-27.993	27.925
Driven Gear Shaft	A(Tapered Roller Bearing)External Gear Side	30.002-30.018	29.950
	B(Tapered Roller Bearing)External Lock Nut Side	29.987-30.000	29.932
	Back Lash	0.10-0.15	-
Intermediate Shaft	A(Ball Bearing)External Diameter	23.980-23.993	23.925
	B(Needle Bearing)External Diameter	25.00-25.01	24.984
Half Shaft	Bearing External Diameter	34.975-34.991	34.923

Manual Transmission 4WD (UL/UR Version)

Part Name	Item			Benchmark	Limit
	Directional Shaft			0.10-0.15	Shim to Adjust
UL/UR Main Shaft	Ball Bearing Ext Diameter	A(Clutch Case Side)		21.940-21.960	21.903
		C(Transmission Case Side)		23.190-23.200	23.150
	Needle Bearing Ext Diameter	B(3Speed Gear)		24.987-25.000	24.930
		D(Main Idle Gear Side)		22.990-23.000	22.937
		E(UL/UR Case Side)		19.973-19.987	19.884
	Bend Limit			Under 0.02	0.05
UL/UR Counter Shaft	Directional Shaft			0.10-0.67	Shim to Adjust
	Needle Bearing Ext Diameter	A(Transmission Case Side)		34.992-35.008	34.938
		B(UL Gear External Diameter		25.987-26.000	25.937
	C(Ball Bearing)External Diameter			19.977-19.990	19.943
UL/UR Idle Shaft	Needle Bearing Ext Diameter	A(Transmission Case Side)		12.708-12.719	12.756
		B(UL/UR Case Side)		16.989-17.000	16.937
UL Counter Gear	Internal Diameter			31.009-31.025	31.075
	Gear Height			27.95-28.00	-
UR Counter Gear	Internal Diameter			31.009-31.025	31.075
	Gear Height			26.5	-
UL/UR Idle Gear	Needle Bearing Ext Diameter	A(Transmission Case Side)		17.726-17.737	17.774
		B(UL/UR Case Side)		22.007-22.020	21.957
	Width			65.95-66.00	65.83
Shift Folk	Nail Thickness		UL-UR	6.4-6.5	-
	Internal Diameter		UL-UR	12.000-12.068	-
	Gap Between Shift Folk Shaft		UL-UR	0.040-0.768	-
UL/UR Piece Plate	Shift Arm B Sliding Groove Width			0.2-0.5	-
Distance Color	Needle Bearing External Diameter			25.987-26.000	25.937
	Internal Diameter			20.003-20.070	20.100
	Width A		A	22.000-22.050	-

	Width B	B	24.35-24.65	24.30
Blocking Ring	Gap Between Gear(Thrust Ring onto Gear)		0.85-1.10	0.40
Defrock L Side Half Shaft	Ball Bearing Ext Diameter		61.987-62.000	61.970
Diff-Lock Sleeve	Sleeve Groove Width		8.4-8.6	-
Diff-Lock Lever	Width		7.9-8.0	-
	Gap Between Nail and Sleeve Groove Width		0.4-0.7	0.9

Front Differential 4WD

Part Name	Item		Benchmark	Limit
Recommended Differential Oil	API GL-4 or	Oil(ℓ)	Dry	0.50
			Oil Change	0.46
Differential Carrier	Tapered Bearing Internal Diameter	Viscous	54.987-55.000	-
		Def Case Side	61.949-61.979	-
Differential Case	Pinion Shaft Internal Diameter		15.000-15.018	-
	Gap Between Pinion Shaft Internal Diameter		0.016-0.052	0.10
	Drive Shaft Internal Diameter		24.005-24.025	-
	Gap Between Drive Shaft Internal Diameter		0.025-0.055	0.120
Differential Pinion Gear	Backlash		0.10-0.15	Use Washer to Adjust
	Internal Diameter		15.042-15.066	-
	Internal Diameter		0.058-0.100	0.15
Drive Pinion	Backlash		0.10-0.15	Shim to Adjust
	Tapered Bearing External Diameter	Viscous	28.557-28.570	-
		Def Case Side	30.002-30.015	

Steering

Part Name	Item	Benchmark	Limit
Steering Wheel	Backlash (By Circumference)	0-10	-
Rack Guide	Angle after Return Adjustment Lock [Angle]	20°-25°	30°
Rack End	Sliding Torque(Lack End	5-30	-
Gear Box	Pinion Start-up Torque [kg-cm]	5-13	-

Suspension (Wheel Alignment)

Part Name	Item			Benchmark	Limit
Wheel Alignment	Total toe		Front Tire	IN 1±3	-
			Rear Tire	0±3	-
	Camber[Angle]	M-HA3	Front Tire	1.00'±1'	-
			Rear Tire	0.00	-
		M-HH3	Front Tire	1.20'±1'	-
			Rear Tire	0.00	-
		M-HA4	Front Tire	1.30'±1'	-
		M-HH4	Rear Tire	0.00	-
	Caster[Angle]	M-HA3,M-HA4,M-HH4		2.30'±1'	-
		M-HH3		2.50'±1'	-
	R/L Rotation Angle	Inside	M-HA3,M-HH3	40.00'±2'	-
			M-HA4,M-HH4	39.30'±2'	-
		Outside	All Type	35.00'	-
	Side Slip		Front	0±3	-
			Rear	-	-
Wheel	Steel Wheel Fluctuation		Horizontal Fluctuation	0-1.0	-
			Vertical Fluctuation	0-0.8	-
	Steel Wheel Fluctuation		Horizontal Fluctuation	0-0.3	-
			Vertical Fluctuation	0-0.3	-

Model	Matching Tire	Matching Wheel
Truck	5.00-12-4PR ULT <STD,ATTAC> 145R12-6PR LT <SDX,SDX-Ⅱ>	12.x3.50B(Copper) 12x3 1/2J (Aluminum Alloy)
Van, Street	5.00-12-4PR ULT <STD> 145R12-6PR LT <Van,Street4WD Except STD> 1.45SR12<Street 2WD>	12x3.50B(Copper) 12x3 1/2J (Aluminum Alloy)

	Item	Benchmark	
Standard Equipment	Pitch Circle Diameter(P.C.D)	100(All Wheel Disk)	
	Off Set	40(All Wheel Disk)	
Wheel Bearing		Benchmark	Limit
	Front Wheel Bearing	0(Shaft Direction)	0.05
	Rear Wheel Bearing	0(Shaft Direction)	0.3

Brake

Part Name	Item		Benchmark	Limit
Parking Brake Lever	Pull Test （Operation Ability20kg）		8-12notch	-
Brake Pedal	Pedal Height(from Floor Surface)		145	-
	Backlash		1—10	-
Master Cylinder	Gap between Master Schilling and Booster Push rod		0.2±0.2	-
Front Disk Brake	Disk Thickness		12.0	10.0
	Disk Fluctuation		-	0.10
	Disk Parallelism		-	0.015
	Pad Thickness		8.5	3.0
Rear Drum Brake	Gap between Brake Drum and Lining		Auto Adjustment	
	Lining Thickness		4.5	2.0
	Internal Diameter of Brake Drum		200.0	201.0
Master Power	Discharge Side Hydraulic	Negative Pressure[mmHg]	Pedal Force[kg]	Hydraulic Output[kg/cm²]
		0	20	Not Under17.4
		300	20	Not Under37.6
		500	20	Not Under51.0

Air Conditioning

Part Name	Item			Benchmark
Air Conditioner System	Lubricating Oil[cc]	Capacitor		
		Cooling Unit		
		Receiver		
		Piping		
Compressor	Lubricating Oil[cc]			60-80
	Clutch Resistance[Ω] (at20℃)			2.7-3.3
	Gap between Pulley and Flange			0.3-0.6(Case Internal Pressure4kg/cm2)
Air Conditioner Belt	Deflection(Pressure onto Center Belt 10kg		Inspection	9.0-12.0
			Brand new	7.0-10.0
	Tensile[kg]		Inspection	22-40
			Brand new	35-60

Electrical (Starter Motor)

Part Name	Item	Benchmark	Limit
Starter Motor	Maker/Output[kW]	NIHON DENSO/0.6	
	Mica Depth	0.4-0.5	0.2
	Fluctuation	0-0.05	0.4
	External Diameter	28.0	27.0
	Brush Length	10.0	6.0
	Brush Spring Pressure(Brand New)[kg]	0.9-1.5	-
Starter Motor	Maker/Output[kW]	NIHON DENSO/0.8,0.9	
	Mica Depth	0.4-0.8	0.2
	Fluctuation	0-0.05	0.4
	External Diameter	28.0	27.0
	Brush Length	16.0	10.0
	Brush Spring Pressure(Brand New)[kg]	1.2-2.0	-
Starter Motor	Maker/Output[kW]	HITACHI/0.8	
	Mica Depth	0.5-0.8	0.2
	Fluctuation	0-0.1	0.4
	External Diameter	40	39.0
	Brush Length	15	11.0
	Brush Spring Pressure(Brand New)[kg]	2	-

Ignition Timing & Spark Plugs

Part Name	Item		Benchmark
Ignition Timing	MT	4MT,5MT	4±2°/1,000
			4±2°/1,150
	AT		4±2°/950
Spark Plug	Model * Standard	NGK	BKR5E-11 *BKR6E-11 BKR7E-11
		ND	K16PR-U11 *K20PR-U11 K22PR-U11
	Electrode Gap		1.0-1.1

Chapter 3

General Maintenance and Tune-Up

- Required Tools This Chapter
- Radiator Cap Test
- Coolant Requirements
- Oil Change and Capacities
- Oil Filter & Part Numbers
- Oil Pressure Testing
- Air filters & Part Numbers
- Spark Plugs & Part Numbers
- Engine Compression Testing
- Alternator & AC Belts
- Valve Clearance Setting
- Carbureted Vehicle Idle Settings
- AC Equipped Idle Up Settings
- CO – HO Level Settings (Carbureted)
- Timing Adjustment & Settings

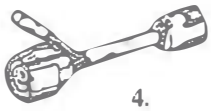
Tools

No.	Tool Number	Tool Name
①	07HAA-PJ70100	Oil Filter Socket
②	07406—0030000	Oil Pressure Gage Attachment
③	07JAA-PN40100	Socket Wrench
④	07GAZ-SE00300	RPM Adapter (Pick up)

1.

2.

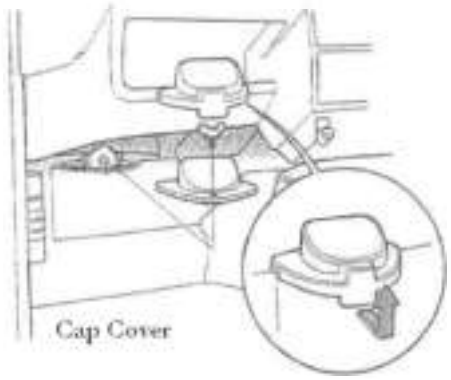
3.

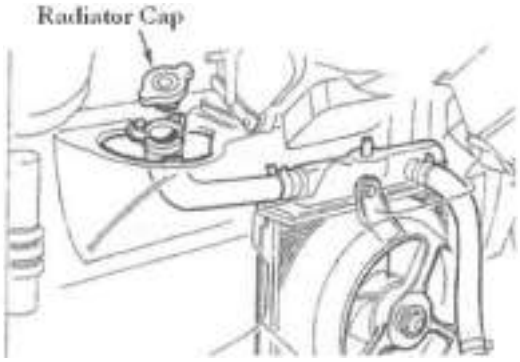


4.

Radiator Cap Test

Caution: Remove Cap Only When Engine Cool

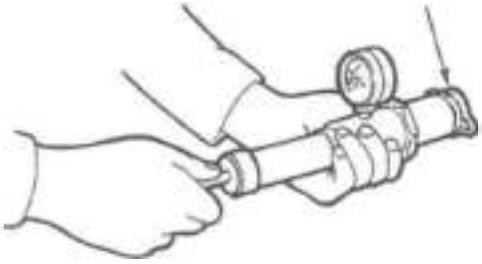




1. Remove Cap
2. Attach to Pressure Tester, Pump Up and Hold 6 Seconds.

Correct Range: 0.75-1.05kg-cm2

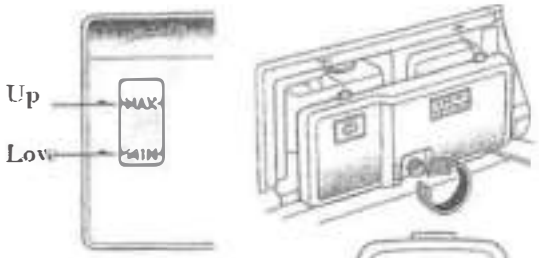
Radiator Cap Pressure Test

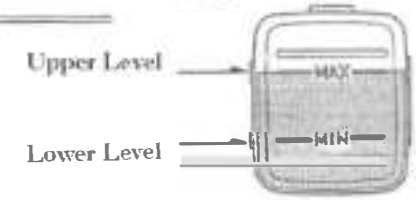


Reserve Coolant Inspection

1 Visualy Inspect Reserve Tank Side Markings for Proper Level.

Truck Van





Van

Note: Do Not Add Water, Only Coolant to Reserve Tank

Note: More Details Located in Radiator Section of this Book

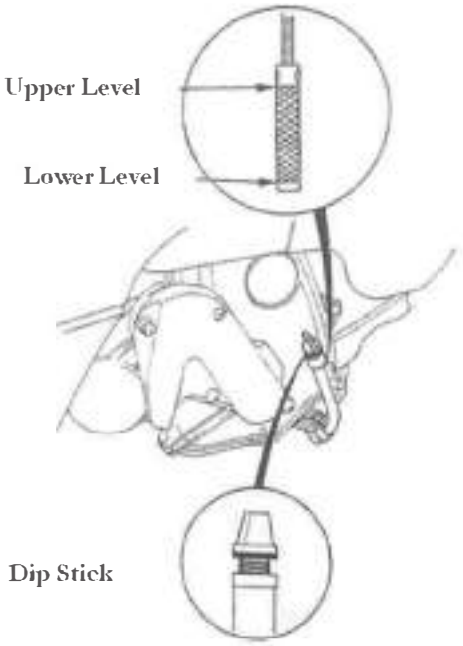
Total Coolant Capacity

Truck		MT : 6.5ℓ	AT : 7.1ℓ
Van		MT : 6.5ℓ	AT : 7.2ℓ
	Rear Heater (V)	MT : 6.7ℓ	AT : 7.4ℓ

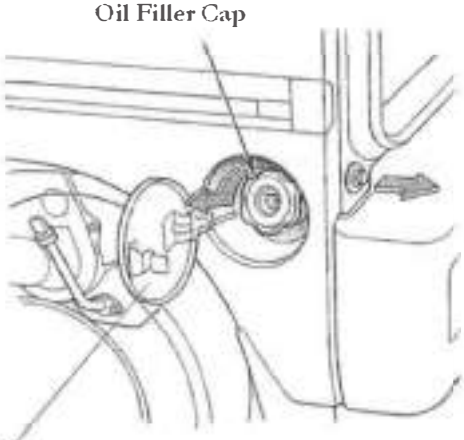
Oil Change

Remove Dip Stick and Check Oil Levle

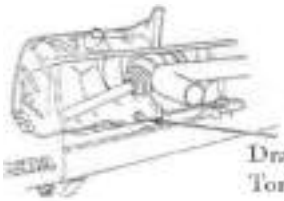
Note: If Oil is Dirty Drain Oil, Replace Filter, Add New Oil Re-Check Level



Oil Filler Cap



Use Diagram Below and Drain Oil (Filter Removal Next Page)



Oil Temperature Range

Normal	0*C~40*C	10W 30
Cold	-30*C~0*C	5W 30

Capacity:

Engine Oil + Filter = 3.0 Liter
Engine Oil = 2.7 Liter

Change Interval: Every 6 Months or 10,000 Kilometers (6250 Miles)

Extreme Cold: Change Every 3 Months

Oil Filter

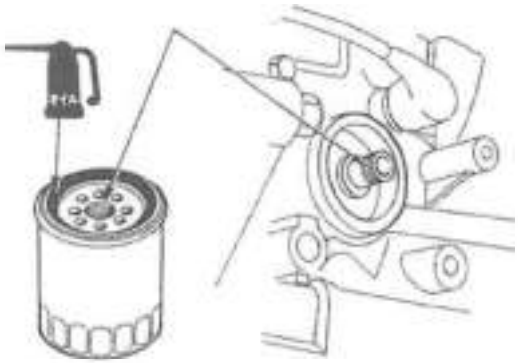
Replacement

Left is Loose, Right is Tight

Socket

Tool 07HAA-PJ70100

Coat These Areas With Fresh Oil



Note: Do NOT Over Tighten Filter

Oil Pressure Check

Note: Before Checking Oil Pressure Make Sure Oil Level is Correct

Note: Change Oil and Fliter if Oil is Dirty Before Test

Use Tool 07406-003000 Oil Pressure Gage Attachment

1. Attach RPM Meter
2. Remove Oil Pressure Switch
3. Attach Pressure Gage (1/8 Inch)

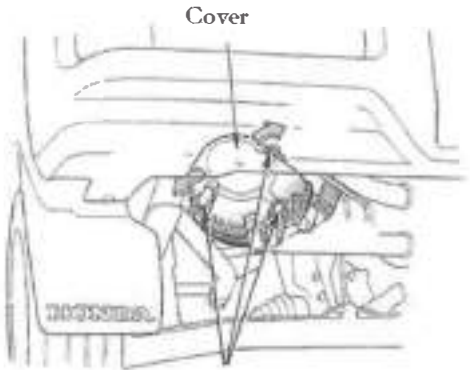
Note: Due to Tight Clearance Issues it Maybe Necessary to Remove Oil Filter to Attach Pressure Gage. After Attaching Gage Attach Oil Filter

4. Start Engine and Warm to Operating Temperature
5. At Idle Oil Pressure Reading 0.7 kg/cm2
6. Increase RPM to 3000 RPM. Reading 3.5 kg/cm2
7. Reading are Correct Remove Gage and Replace Pressure Switch

Note: Failed Readings Continue to Oil Pump Replacement Section of This Book

Replace Air Element 12,000 Kilometers

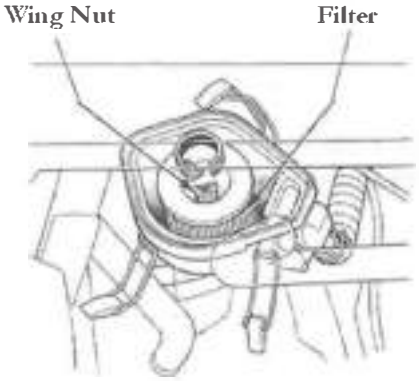
Remove Cover by Un-Snaping Clips



Retainer Clips (Un-Snap)

Remove Wing Nut and Slide Out Filter

Note: Before Replacing Air Filter Clean Container Area

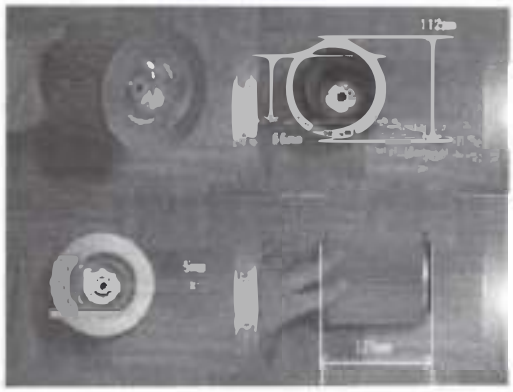


Engine: E07A
Series: M-HA3 - HA4
M-HH3 - HH4

Part Numbers

TOYO: TO-3670
MICRO: A-60
NKK: 4HM-1046
PMC PA-5623

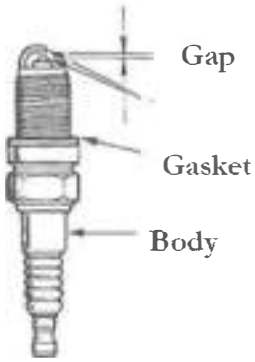
Size Dimensions



Spark Plugs

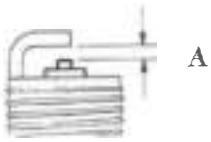
Replace Spark Plugs 48,000 Kilometers

Note: Champion IRIDIUM Replace at 160,000 Kilometers



Spark Plug Gap

A= 1.0~1.1mm



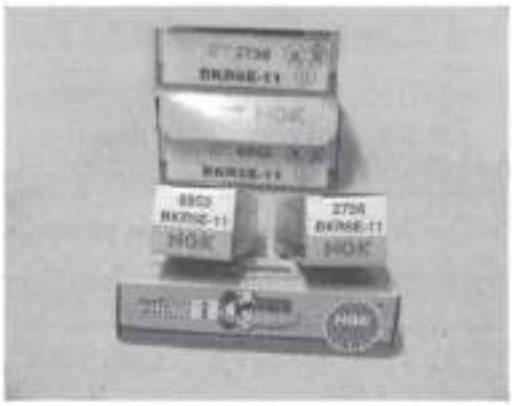
Note: Spark Plug Torque: 1.5kg-m

Spark Plug Part Numbers

USA Champion IRIDIUM #9001

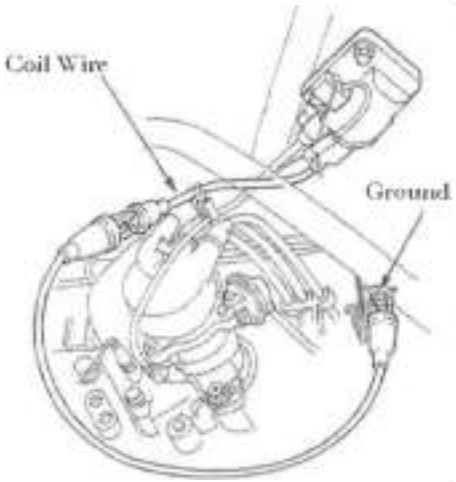
DENSO: K16R-U11, K16PR-U11, Q16PR-U11

NGK Series



Note: DENSO & NGK Series Replace at 48,000K

Engine Compression Check



1. Remove Turn Signal 15A Fuse from Fuse Box

Note: Removing Turn Signal Fuse Will Disable Fuel Pump

2. Disconnect Coil Wire from Distributor and Connect to Ground as in the Diagram on the Left

3. Remove All 3 Spark Plugs From Engine

Attach Compression Gage to Cylinder 1

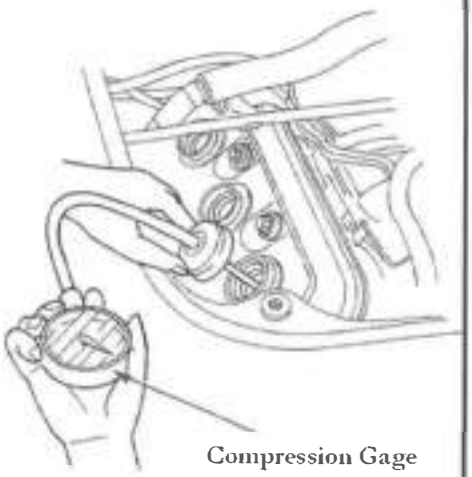
Caution: Be Careful When Turning Over Engine

Note: Starter Motor = 250RPM Speed

In Range: 14.0kg/cm2 @ 250RPM
Out of Range: 9.5kg/cm2 @ 250RPM

Check all Cylinders

Note: Cylinder Balance Must Not Have a Difference Within 2.0kg/cm2



Compression Gage

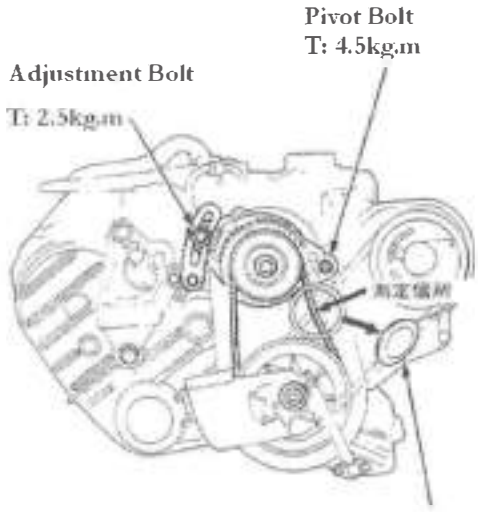
Note: If Compression FAILS Check Valve Settings. Re-Set Valves and Re-Test

Accessory Belts
(Alternator)

Belt Inspection

Note: Alt Belt/AC Belt Change 68,000K

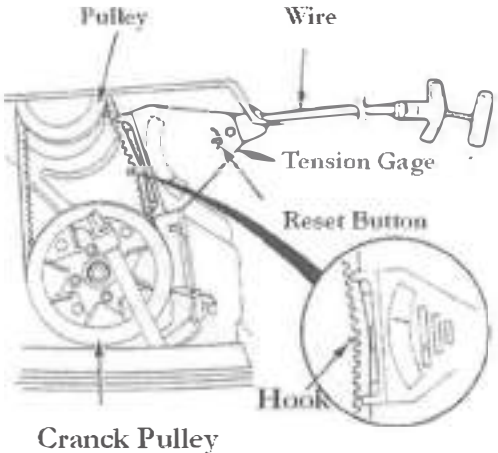
1. Visually Inspect Belts for Wear
2. Remove Inspection Grommet



Inspection Grommet
(Remove)

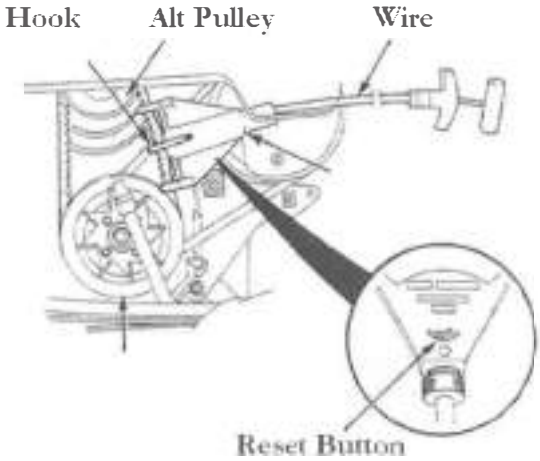
3. Test Tensioner Gage on a Known Weight. Reset to Zero

4. Attach Hook to Belt



Cranck Pulley

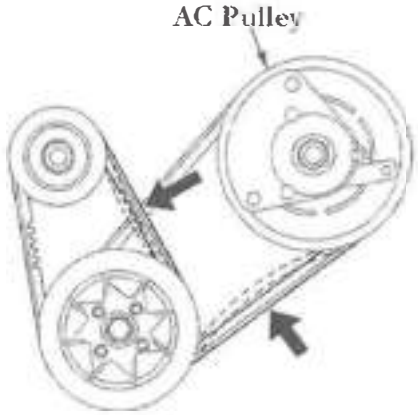
5. Belt Tension 20~30kg
Travel 9~12mm

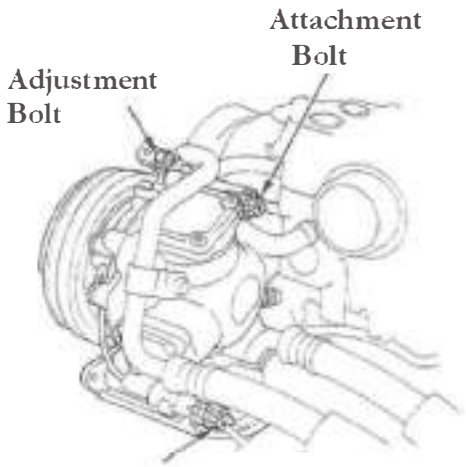


6. After Adjustment Repeat Test
(Reset After Each Test)

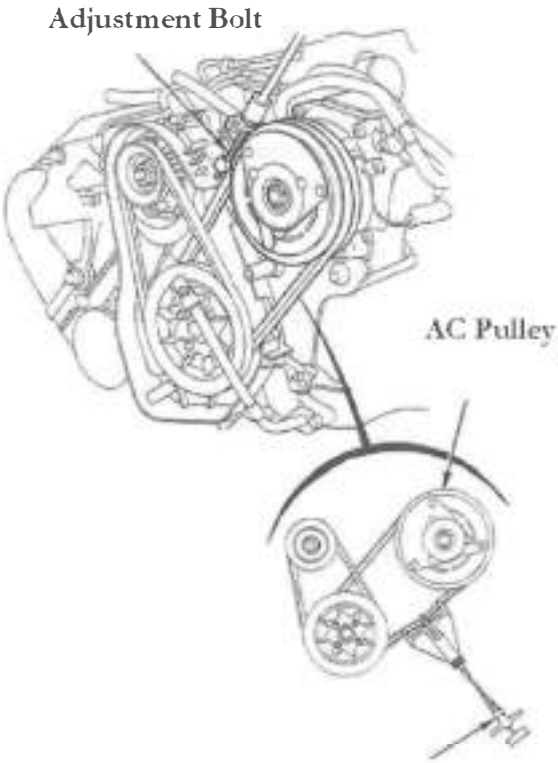
(AC Compressor Belt)

Belt Diagram





Attachment Bolt



Tension Gage

Tension Gage

New Belt Reading: 35~60kgf
In Place Belt Reading: 22~40kgf

Replace AC Belt: 68,000K

Note: Check AC Fluid When Replacing Belt

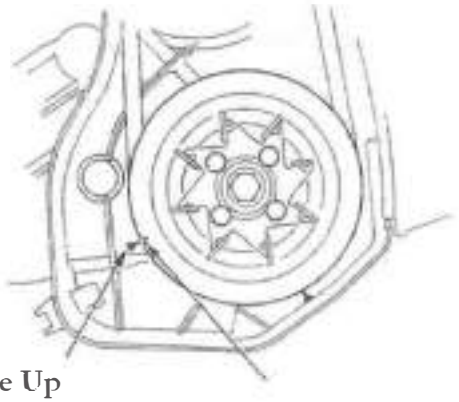
Valve Clearance

Note: For Detailed Instructions on Timing Belt System See Timing Belt Section of this Book

1. Remove Appropriate Covers and Set Engine to Clyinder #1 at TDC

2. Verify Cranshaft Positioning Marks as Shown in the Diagram Below

Crankshaft Mark (Red)



Line Up Mark

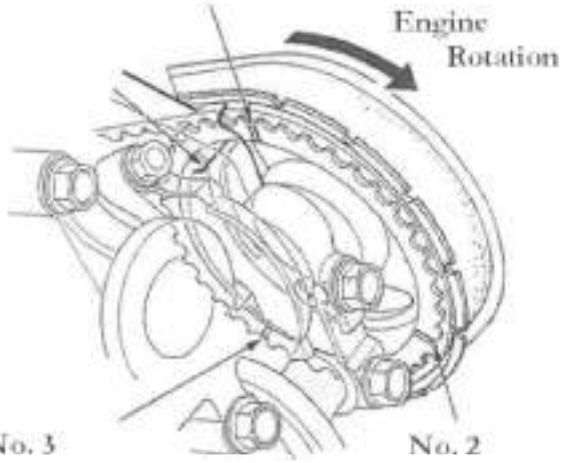
TDC Mark (Red Mark)

3. Remove Valve Cover

Note: Do Not Re-Use Valve Cover Gasket

4. Verify Cam Pulley is Pointing to No. 1 Cylinder TDC Posistion

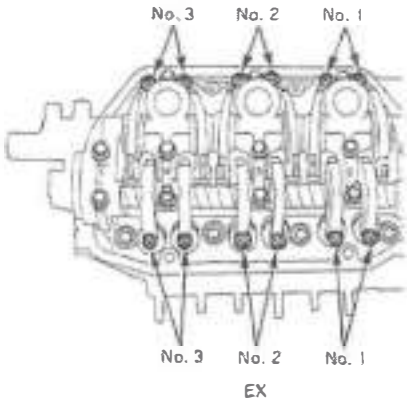
No. 1 Cylinder TDC Mark



No. 3 Cylinder TDC Mark

No. 2 Cylinder TDC Mark

Valve Positions
IN= Intake
EX= Exhaust

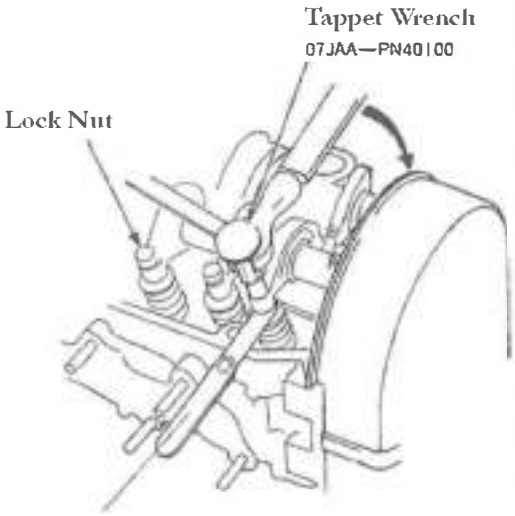


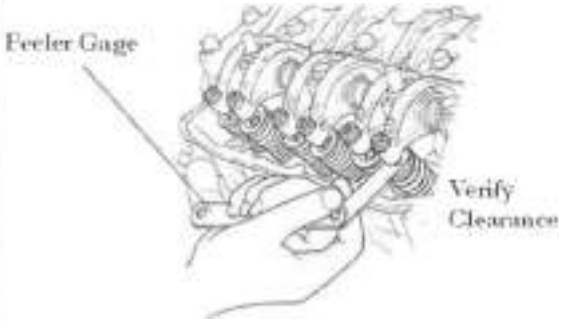
Note: Set Valve Clearance "Cold".

IN= Intake EX= Exhaust
IN: 0.18~0.22mm

EX: 0.25~0.29mm

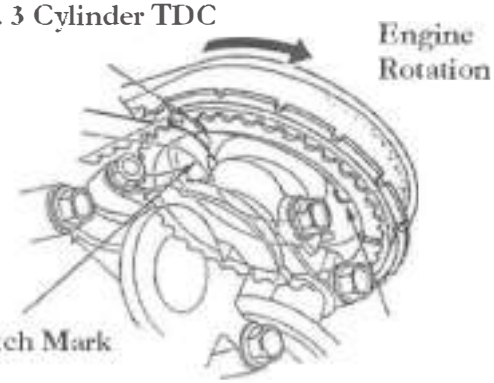
Adjustment Procedure



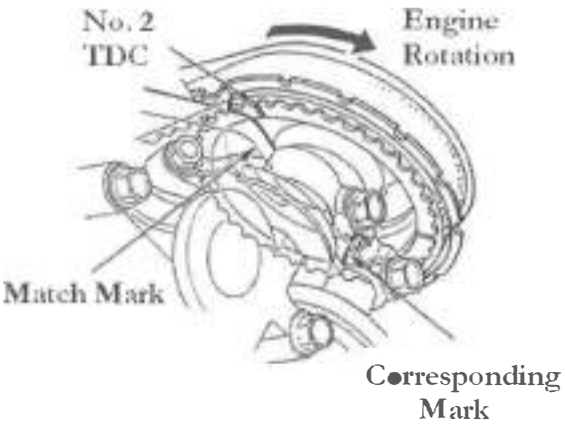


1. Set Cylinder No.1 and Then Rotate Cam Pulley 120 Degrees to Set Cylinder No. 3

No. 3 Cylinder TDC



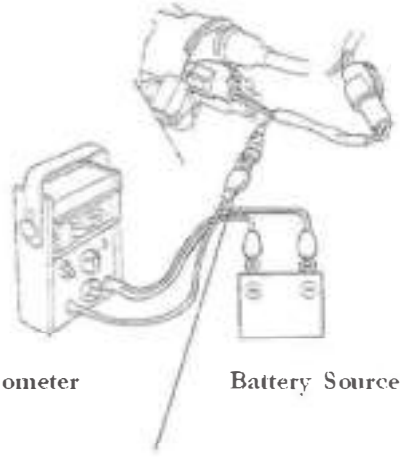
2. Next Rotate Cam Pulley 120 Degrees to Set Cylinder No. 2



Note: Do Not Re-Use Valve Cover Gasket

Carbureted Idle Setting

Note: If 3 Cylinder Tachometer is Not Available Use 6 Cylinder and Calculate



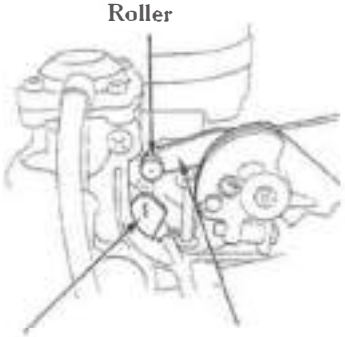
Tachometer

Battery Source

Attach Here

1. Run Engine Up to 3000 RPM for 2 Minutes and Let Idle
2. Remove Carburetor Cover and Disconnect Fast Idle Roller
   Note: Re-Connect After Idle Setting

Roller



Fast Idle Cam

Fast Idle Lever

Set Idle

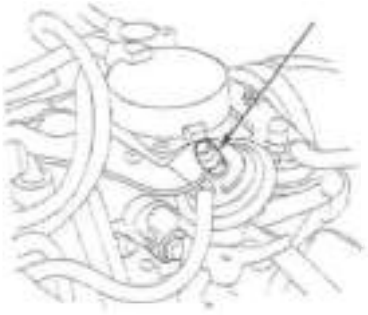
Idle RPM Specifications:
MT Vehicle 1000+-50RPM
1150+-50RPM (4WD Truck UL/UR)
AT Vehicle 950+-50RPM
Note: AT Set in "D"

Adjustment Screw

Note: If Idle Does Not Set Properly Check Ignition TIming

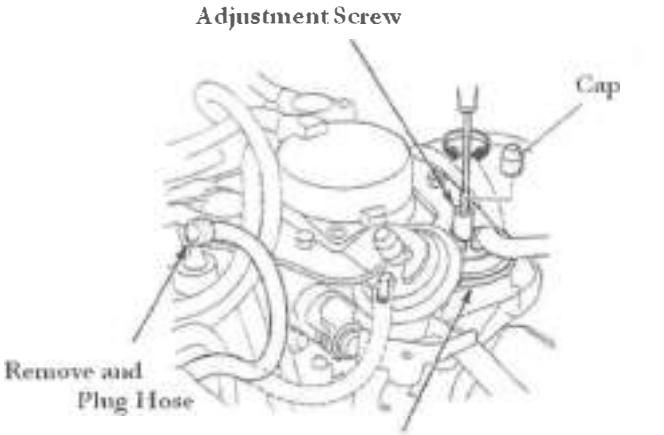
Note: If Ignition Timing is Set Correctly Check Pilot Screw In diagram Below

Pilot Screw



AC Idle Up Adjustment

Note: Only AC Equiped Vhehicles



Idle Speed AC Engaged
MT Vehicles: 1350+-50 RPM (Truck)
1100+-50 (Street, Van)

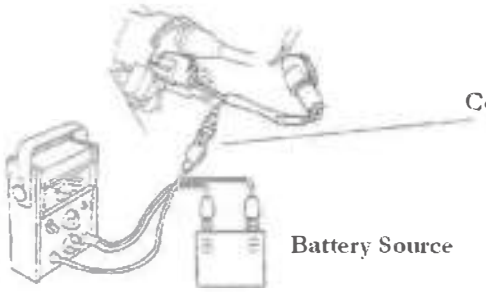
AT Vehicles: 950+-50RPM ("D" Drive Position)

1. Unplug Vacuum Hose as Shown in the Above Diagram and Plug
2. Remove Adjustment Screw Cap Cover
3. Attach Tach and Set Idle Speed to Specifications.

Note: Erratic Idle Can Be Caused By Incorrect Timing Settings.
Vacuum Leaks Can Fail to Open Diaphragm

CO & HO Levels

Note: If 3 Cylinder Tachometer is Not Available Use a 6 Cylinder Tachometer and Calculate



1. Connct Tachometer and Set Idle Speed To Specifications

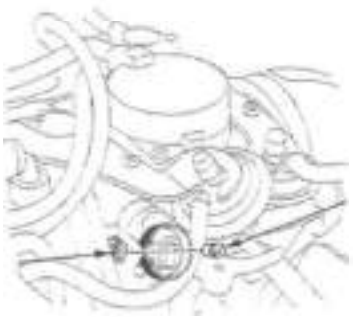
Idle Speed
MT Vehicle: 1000+-50 RPM
1150+-50RPM (4WD Truck UL/UR)
AT Vehicle 950+-50RPM (Set in "D" Drive)

CO Level at Idle: =Below 3.0%
HO Level at Idle: =Below 900ppm

Note: Warm Engine and Place Sniffer into Tail Pipe

2. Remove Caps from Pilot Screw and Limiter Screw

3. Use Screws to Slowly Adjust CO & HO Levels

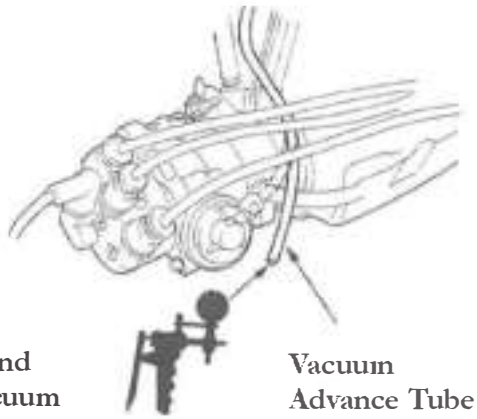


Note: After Turning Screws Wait Minimum 3~5 Minutes for Results

Note: If Levels Can Not Be Adjusted Within Limits Check The Following
1. Ignition Timing
2. Spark Plugs
3. Ditributor Cap and Rotor
4. Valve Clearance
5. Carburetor

Timing Settings

Distributor Vacuum Test

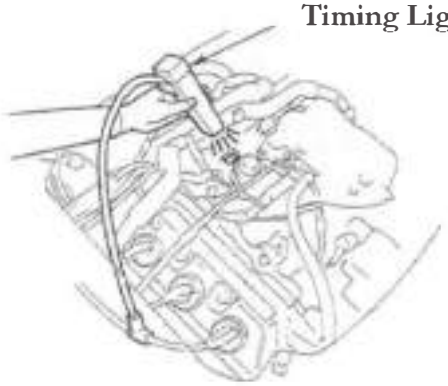


Hand Vacuum Pump

Vacuum Advance Tube

1. Warm Engine to Operating Tempurature
2. Disconnect Vacuum Advance Hose and Attach to Vacuum Pump/Gage
3. No Vacuum Should Be Present at Idle, Vacuum Detected Replace Thermo-Valve and Re-Test
4. Run Engine To 1200~5000 RPM. Vacuum Should be Present Entire Range. No Vacuum Replace Thermo-Valve

Timing Light



Note: Not Necessary to Disconnect Vacuum Hose For Idle Timing

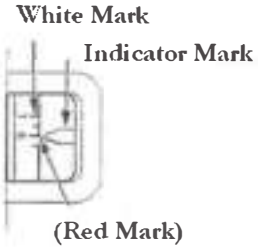
1, Attach Timing Light To Cylinder #1 Spark Plug Wire. Set to Specifications

MT	4°BTDC/1000(1150)rpm
AT	4°BTDC/950rpm

MT = Manual Transmission
AT = Automatic Transmission

MT Vehicle

AT Vehicle



Initial Timing
(Point Mark)

MT = Red to Indicator Mark = 4*BTDC
AT = Red or (4) Mark = 4* BTDC

Chapter 4

Engine Cooling System

- Coolant System Diagrams & Capacities
- Coolant System Pipe & Hose Routing Components
- Radiator Removal
- Cooling System Air Bleeding
- Thermostat Replacement
- Thermostat Specifications & Testing Procedure
- Water Pump Testing & Removal Procedure
- Cooling Fan Relay & Sensor Location
- Sub-Cooling Control Sensors (Van)
- Sub-Cooling Control Sensors (Truck)
- Thermo-Switch & Sub-Cooling Sensor Testing
- Radiator Fan/Condenser Fan/sub-Cooling Relay

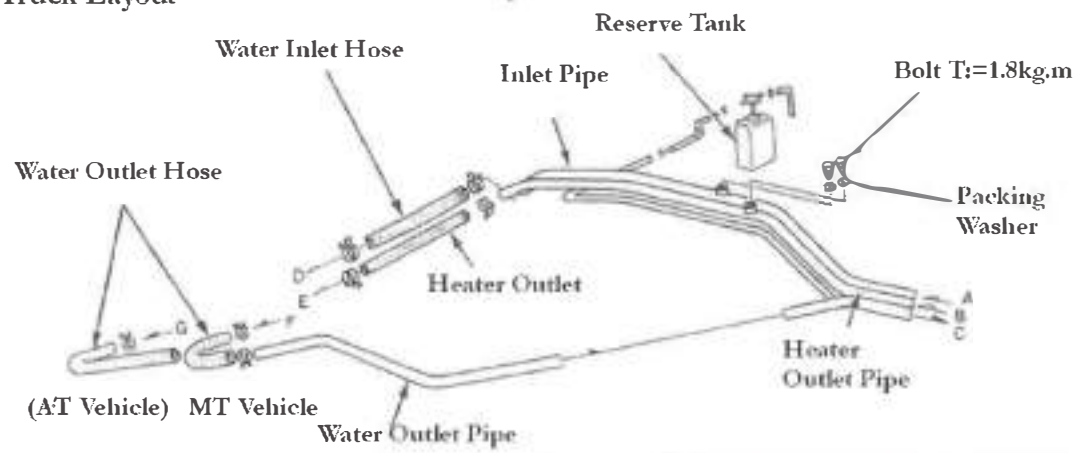
Engine Cooling System

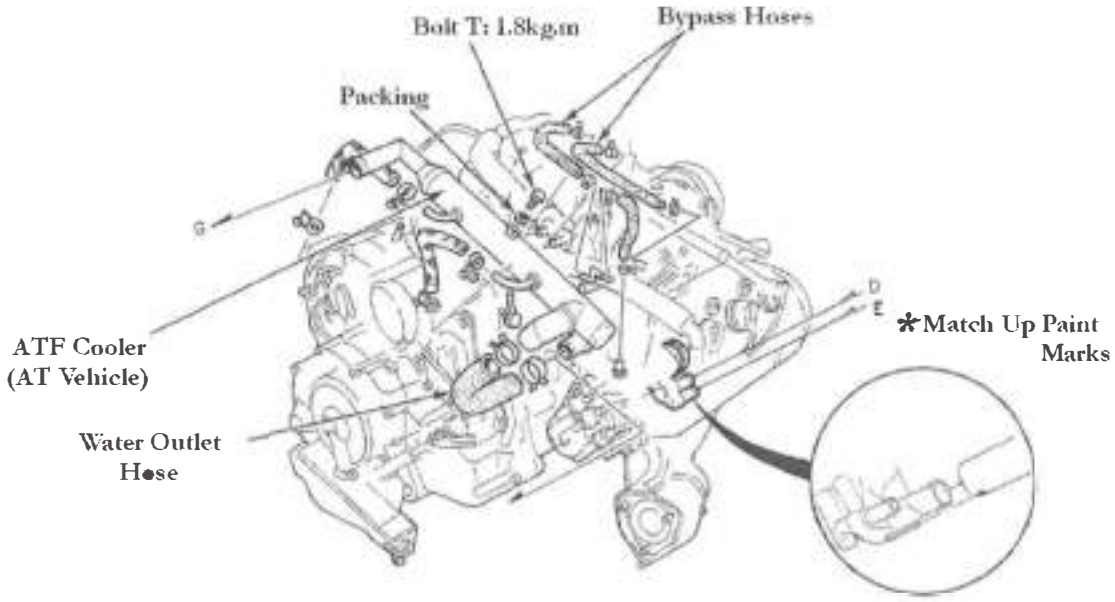
Coolant Diagrams (Truck)

Capacities

Truck:	MT	6.5 Liters
	AT	7.1 Liters
Van	MT	6.5 Liter
	MT+ Rear Heater	6.7 Liters
	AT + Rear Heater	7.4 Liters

Truck Layout

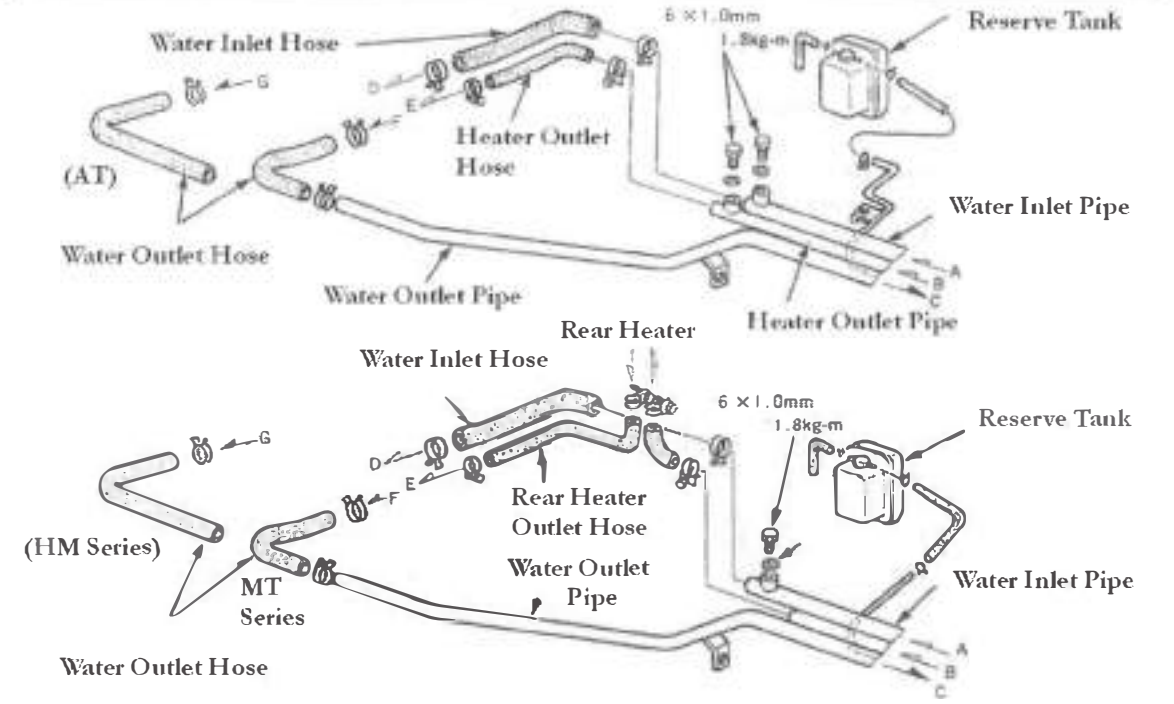


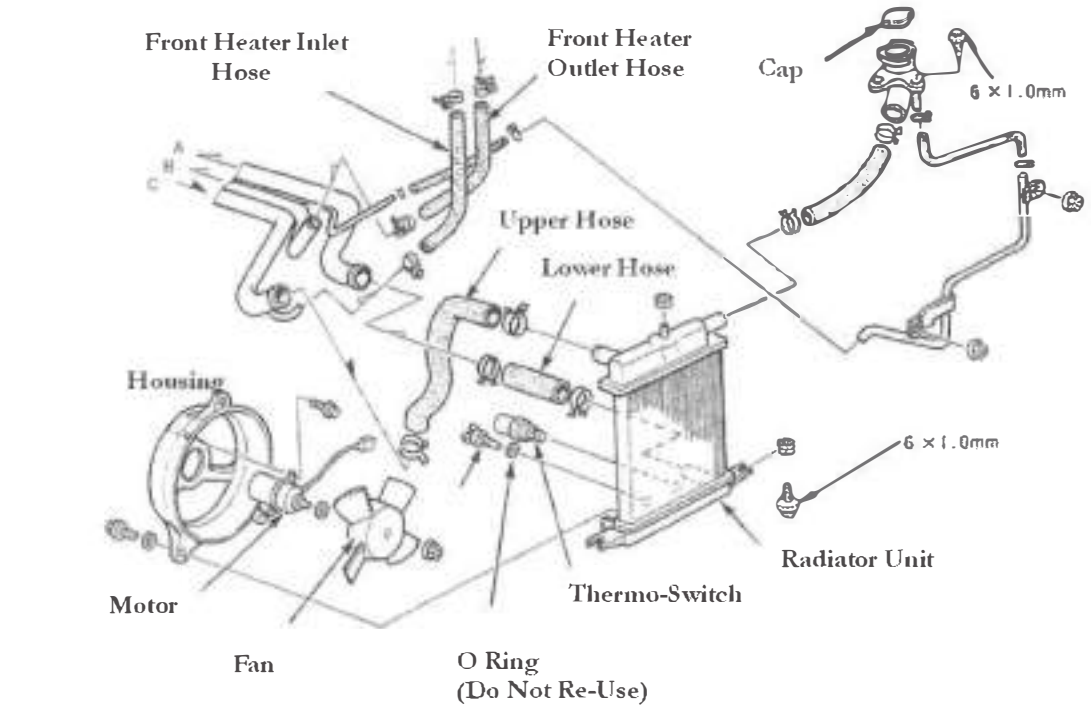


Engine Cooling System

Van Cooling System Layout

Van Rear Heater Option

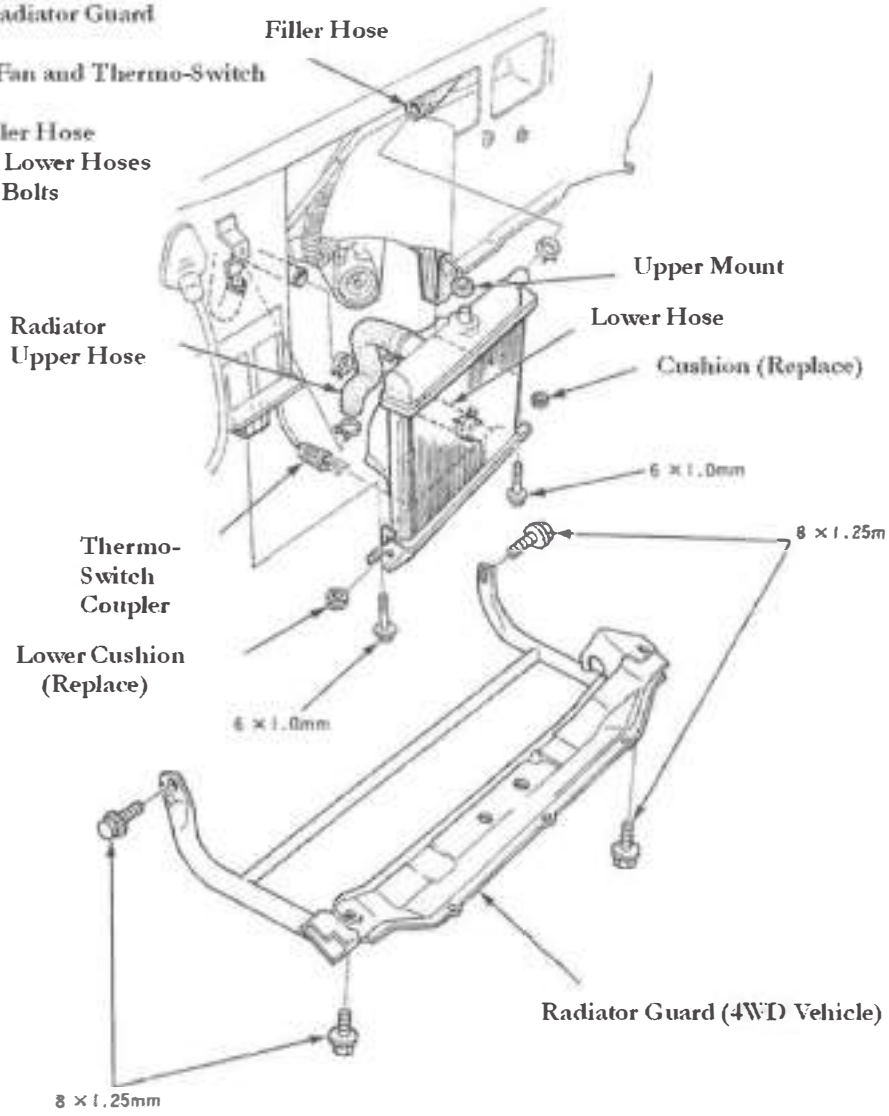




Engine Cooling System

Radiator Removal

1. Remove Front Bumper
2. (4WD) Remove Radiator Guard
3. Drain Radiator
4. Remove Cooling Fan and Thermo-Switch Coupler
5. Remove Water Filler Hose
6. Remove Upper & Lower Hoses
7. Remove Support Bolts
8. Remove Radiator



System Air Bleeding

Note: Air in Cooling System Can Cause Overheating and Water Pump Failure. Air Should Be Bleed Every Two Years

	Type	Capacity
T	MT	6.5ℓ
	AT	7.1ℓ
V	MT	6.5ℓ
A	AT	7.2ℓ
N	MT Rear Heater	6.7ℓ
	AT Reare Heater	7.4ℓ

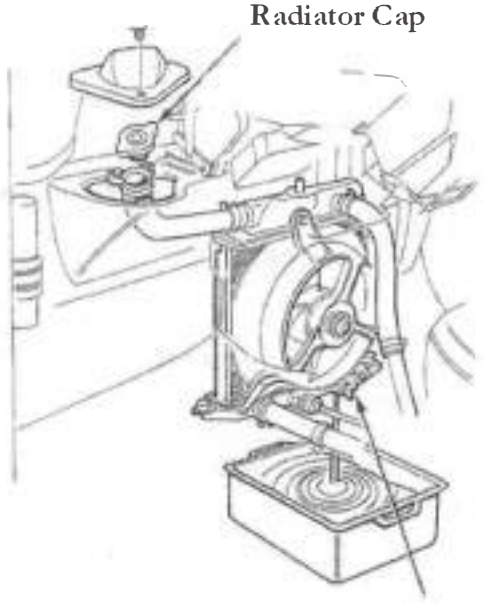
Note: Use Diagrams to The Right For Draining System

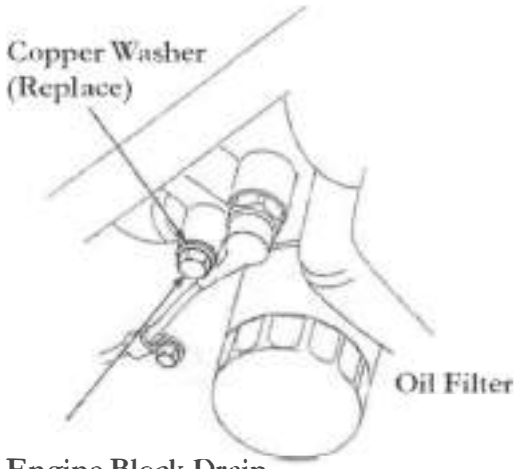
Caution: Engine and Cooling System Must be Cool Before Draining

1. Remove Radiator Cap
2. Open Petcock Valve on Bottom of Radiator
3. Remove Block Drain Bolt (Must Replace Copper Washer)
4. Drain All Water
5. Attach Engine Block Bolt and Torque to 4.0-5.0kg-m
6. Close Petcock Valve
7. Fill Radiator With 70% Water~30% Coolant
8. Start Engine and Add Water/Coolant as Needed.

Caution: Be Careful of Hot Water

9. Shut Off Engine and Shake Vehicle to Release Air Bubbles.
10. Start Engine Again and Repeat Process Until All Bubbles Have Gone.
11. Cap System and Test Drive



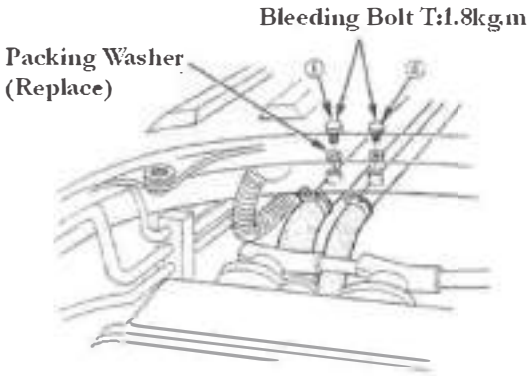


Engine Block Drain

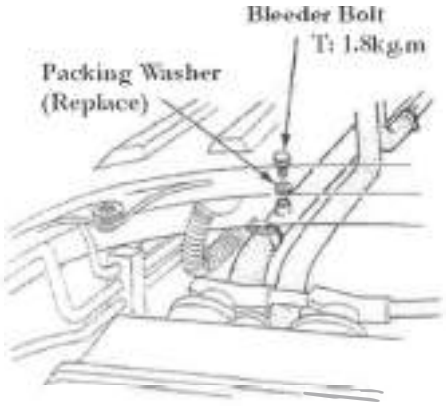
Note: If Complete System Air Bleeding is Required Use The Following Diagrams to Locate Bleeder Ports

Note: Packing Washers Must Be Replaced

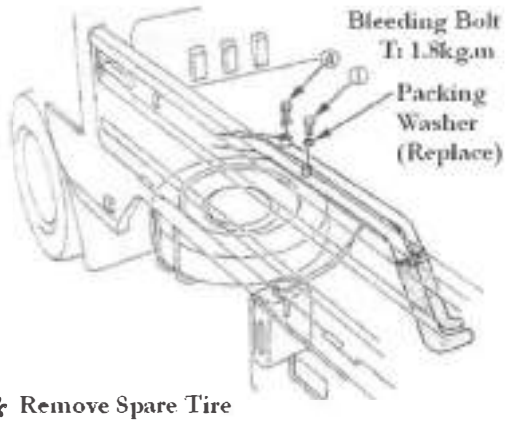
(Van Rear Heater Option)



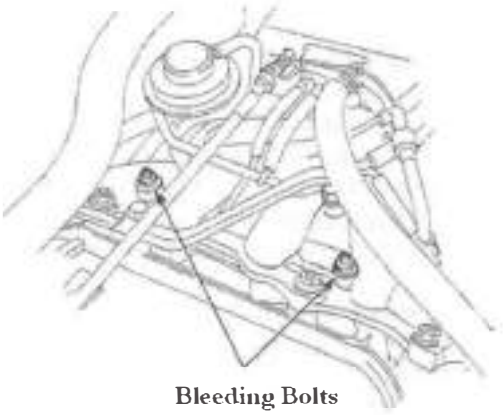
(Van Non-Rear Heater)



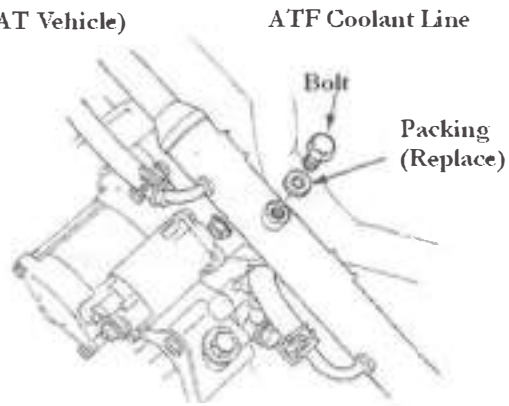
(Truck)



* Remove Spare Tire



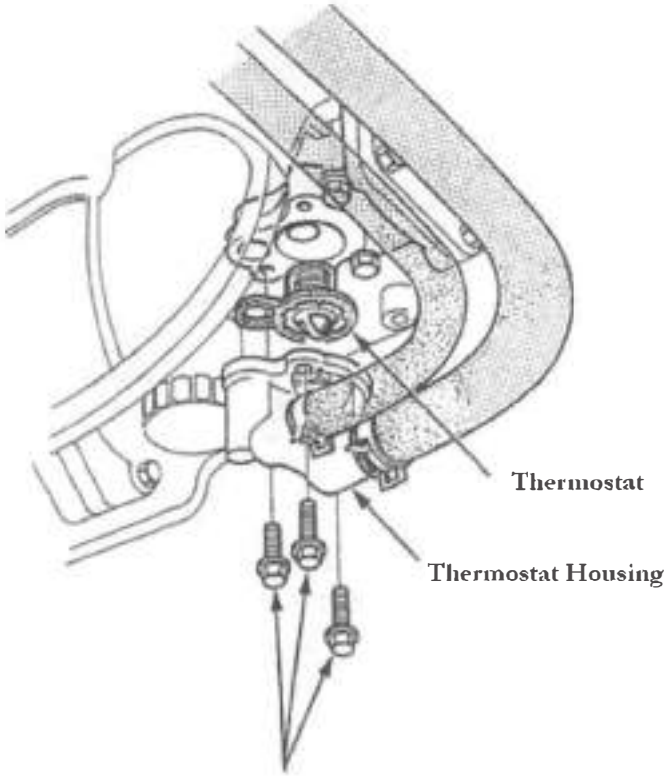
(AT Vehicle)



Thermostat Replacement

Note: Do Not Re-Use O-Ring. O-Ring Must Be Replaced

1. Drain Coolant
2. Remove (3) Retainer Bolts
3. Remove Thermostat



6 x 1.0mm
T: =1.0kg.m

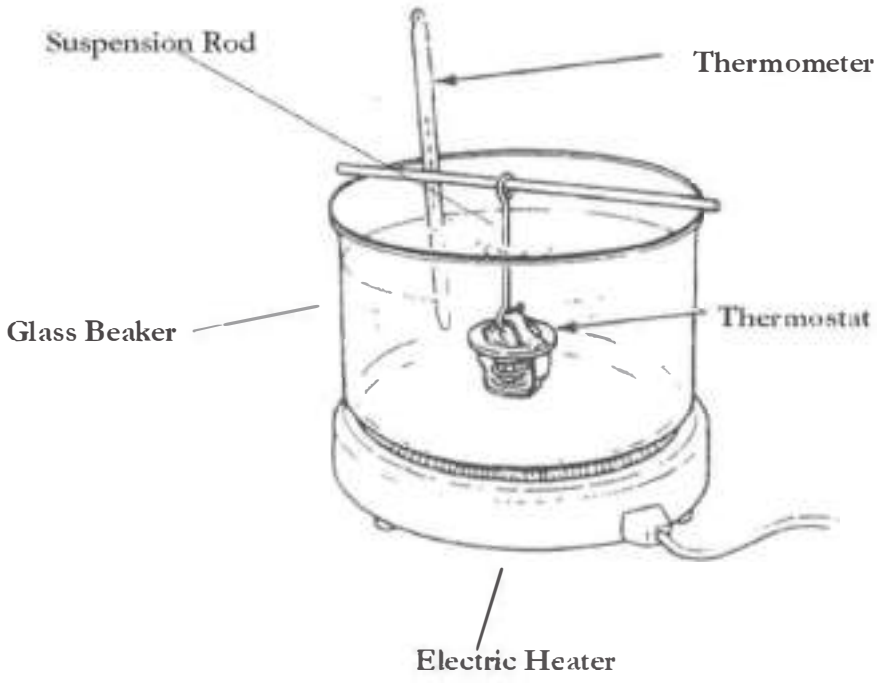
4. Clean All Parts Before Assembly
5. Install New O-Ring and Thermostat
6. Assemble and Add Coolant 70% Water 30% Coolant
7. Start Engine, warm and Check for Leaks

Thermostat Specifications

Caution: Wear Protective Gear When Working With Hot Water

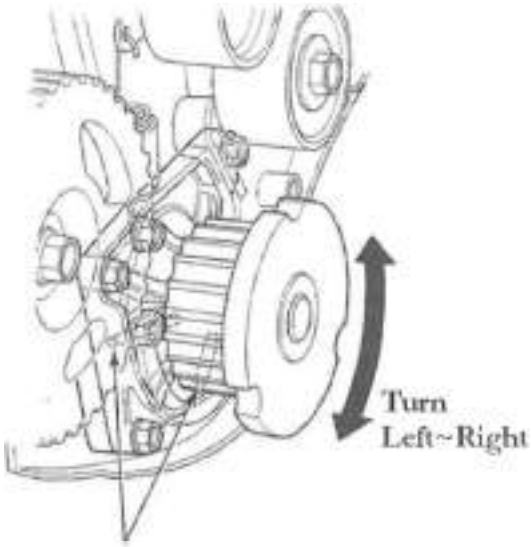
1. Suspend Thermostat as in Diagram Below
2. Slowly Raise Temperature
3. Obsevere Opening Temperature.

Note: If Unit Fails to Open at Below Listed Ranges Replace
Unit Can Not Be Repaired



Opening Temperature	76~80*C
Initial Lift	0.35mm
Full Opening Temperature	90*C
Total Lift	8mm

Water Pump Bleed Hole Test



Note: If Water Is Detected From Bleed Holes Pump Must Be Replaced

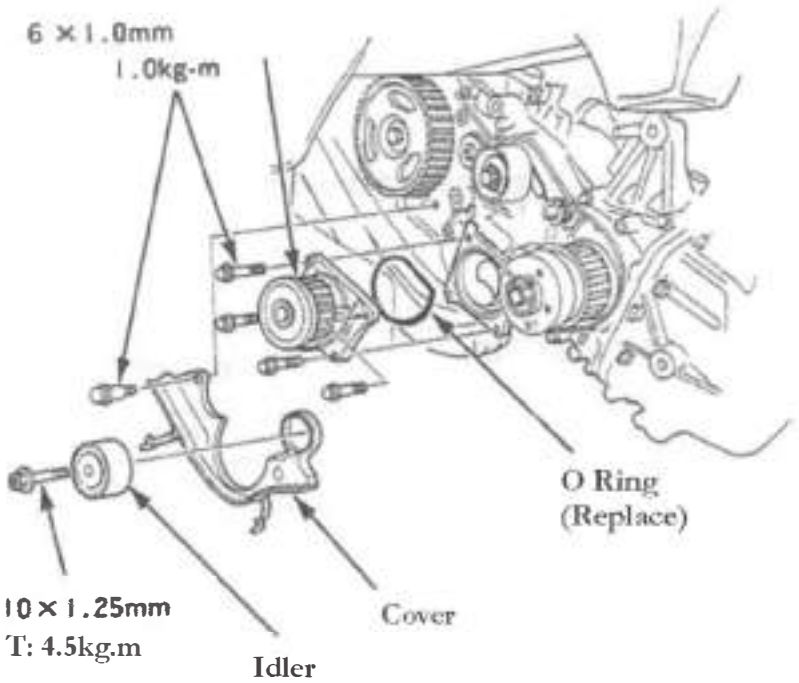
1. Remove Belt
2. Rotate Left~Right Direction. Water is Detected Drain Coolant System and Replace Water Pump

Water Pump Removal

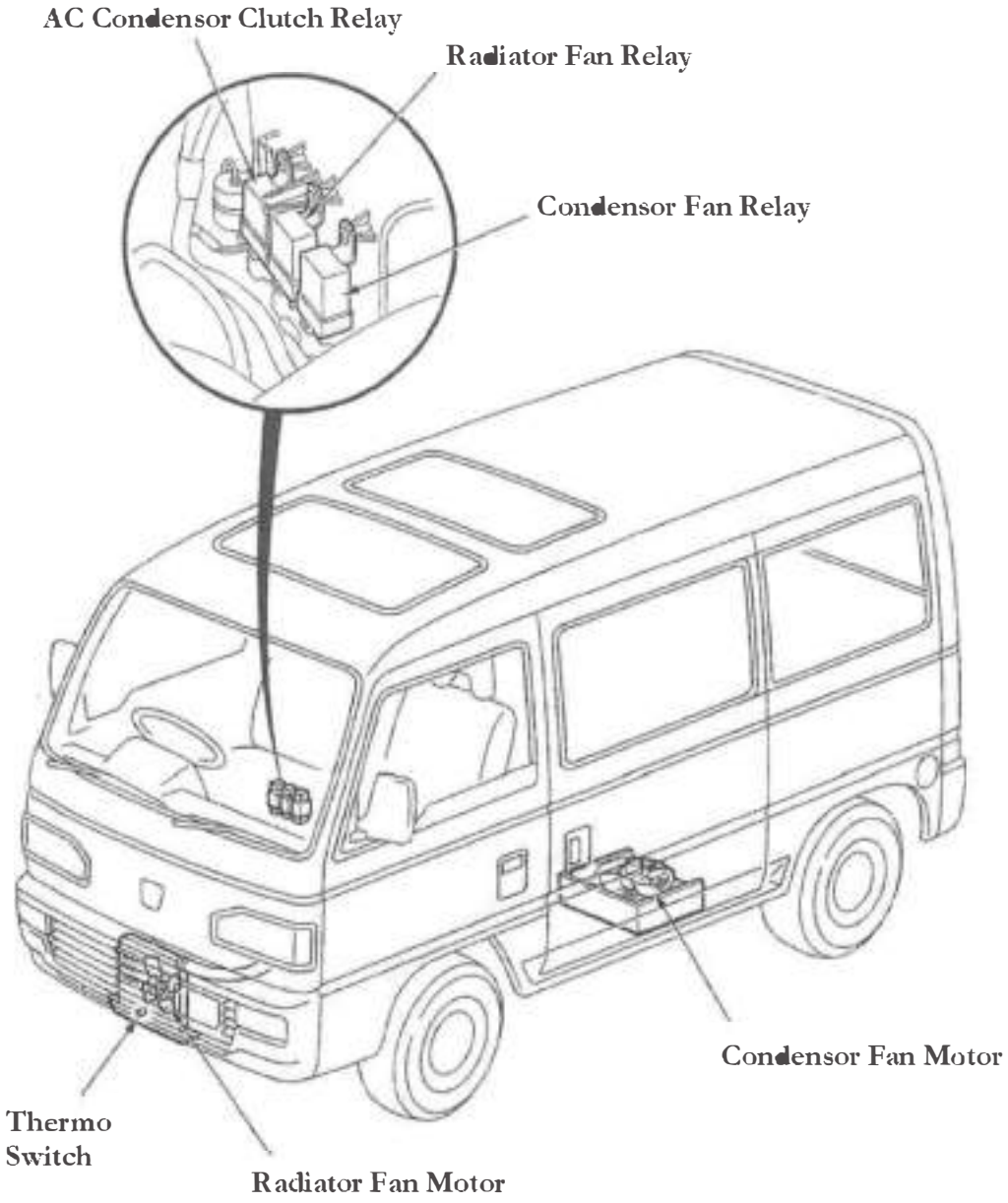
1. Remove Timing Belt
2. Remove Timing Belt Idler
3. Remove Timing Belt Back Cover
4. Remove (4) Attachemt Bolts
5. Remove Pump

Note: Do Not Re-Use O Ring

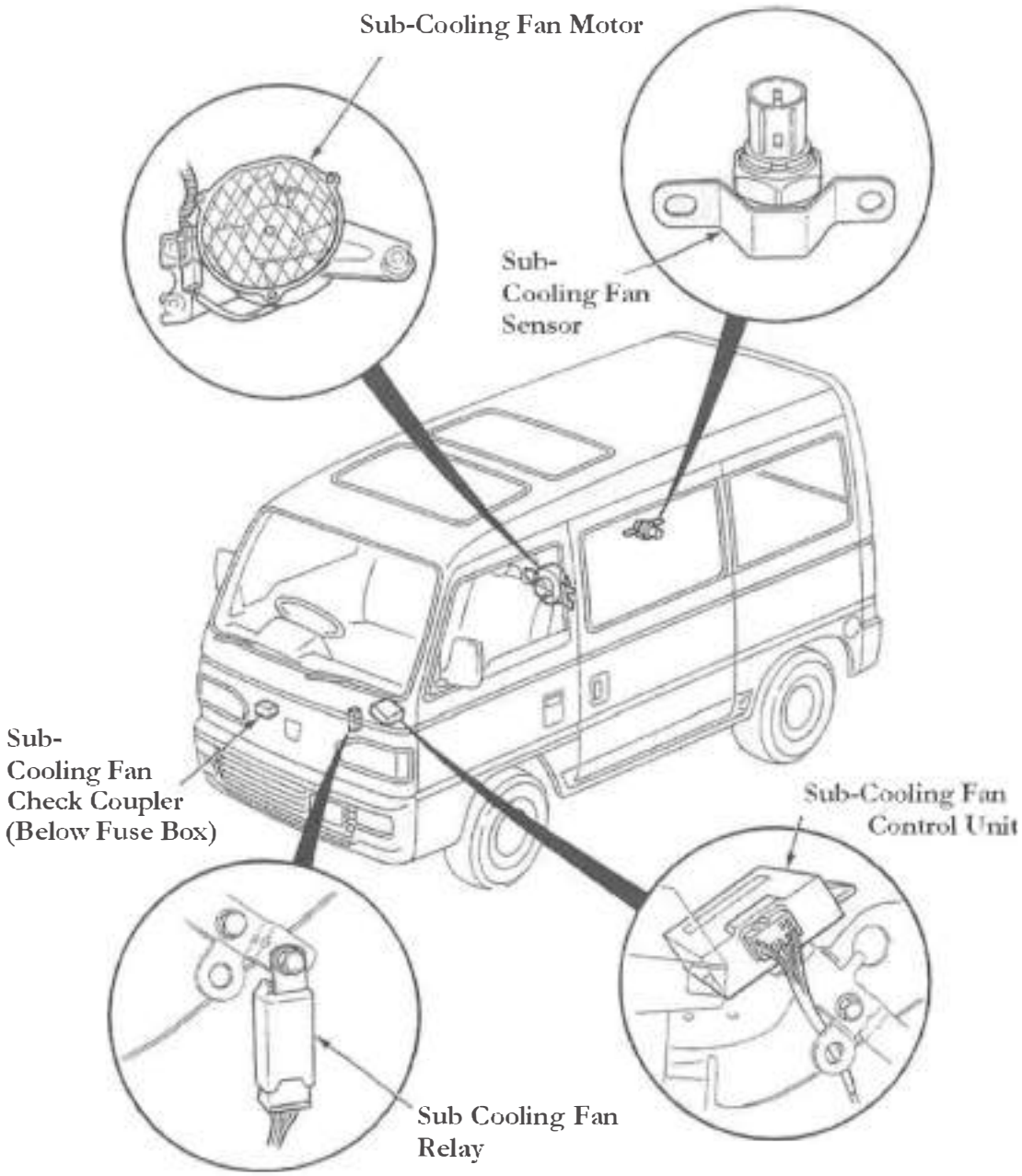
Water Pump



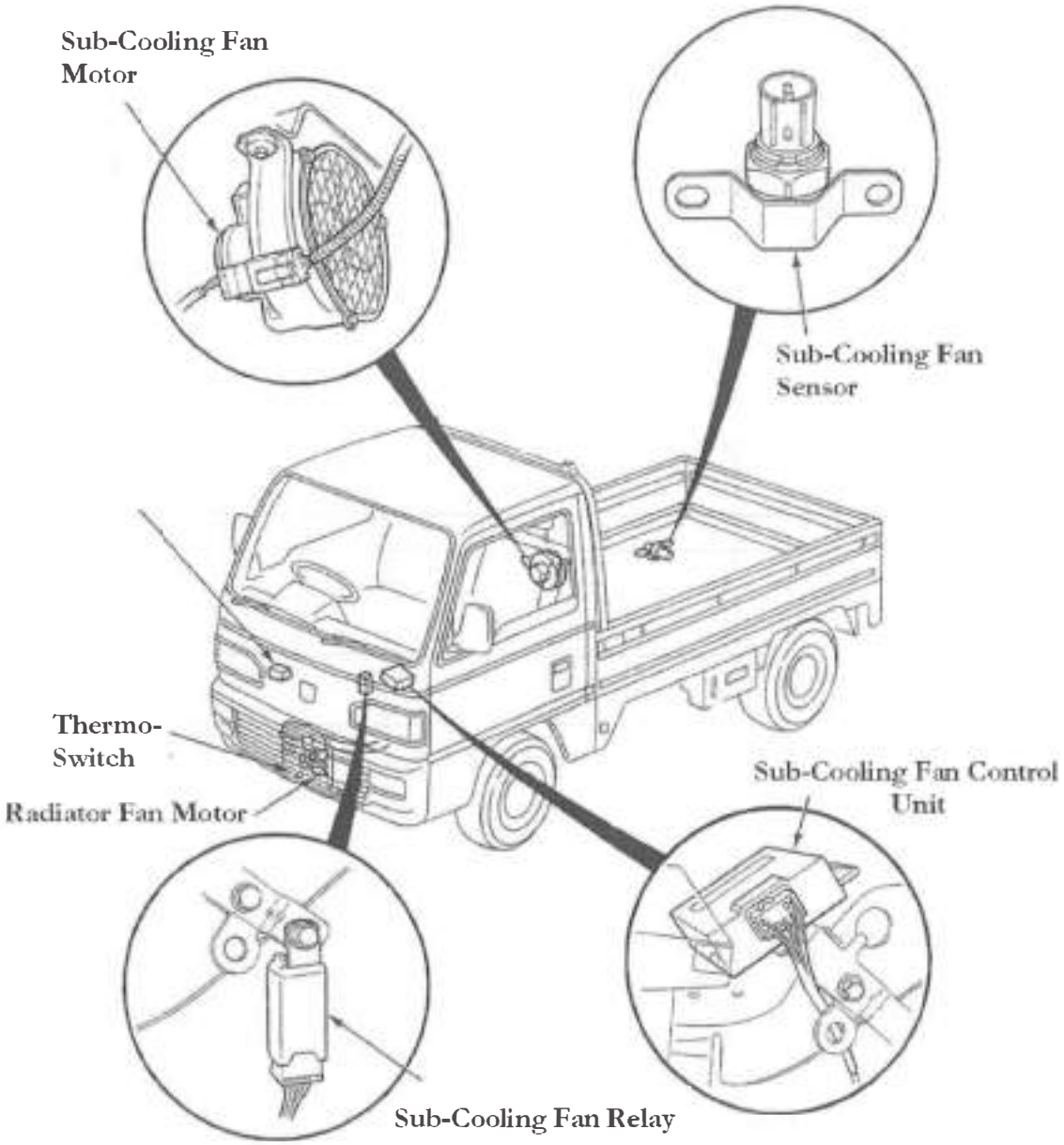
Cooling Fan Relay Location



Van



Truck



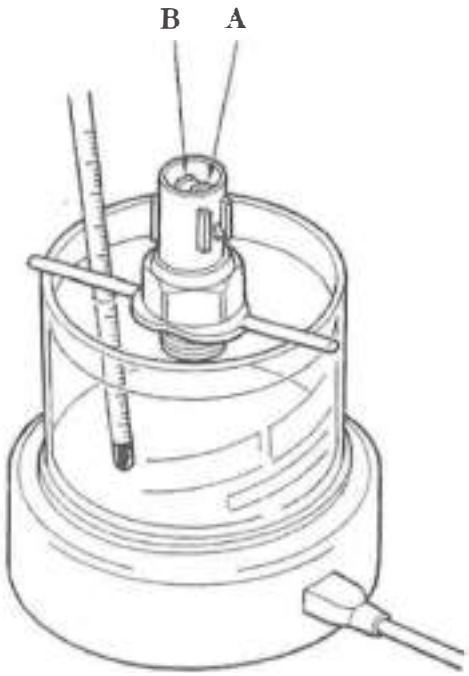
Engine Cooling System

Thermo-Switch Testing

Thermo- Switch

Note: Do Not Get Electrical Connections Wet

Switch In OPEN Position: 93+-3*C
OFF Position 85+-3*C

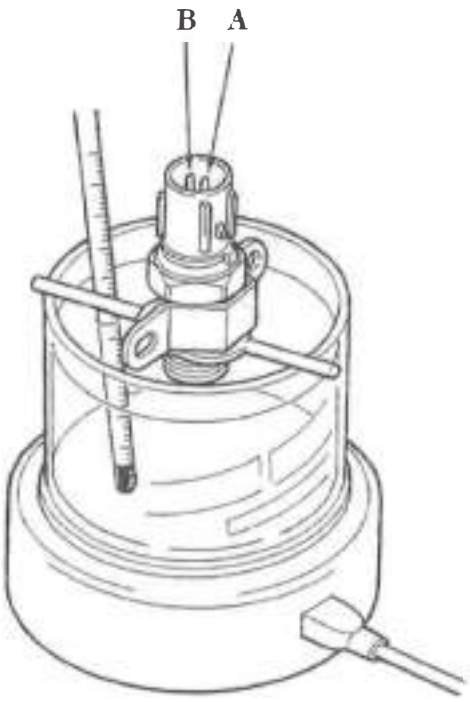


Sub-Cooling Fan Sensor

Note: Do Not Get Electrical Connections Wet

VAN
Switch in OPEN Position: 65+-2*C
OFF Position: 57+-2*C

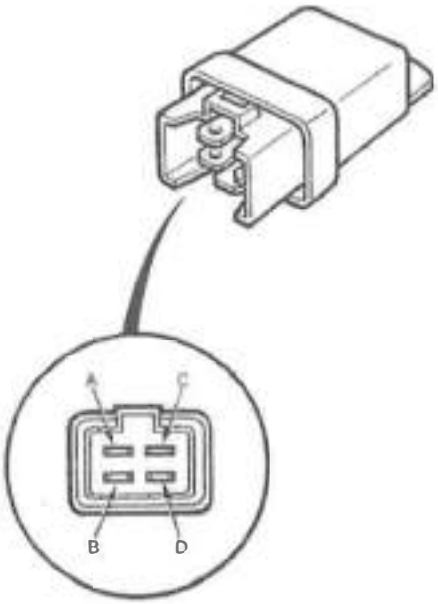
TRUCK
OPEN: 60+-2*C
OFF: 52+-2*C



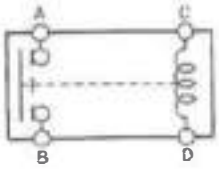
Note: Be Careful Not to Mix Switches as They Are Not Interchangable

Cooling Fan Relay Circuit & Pins

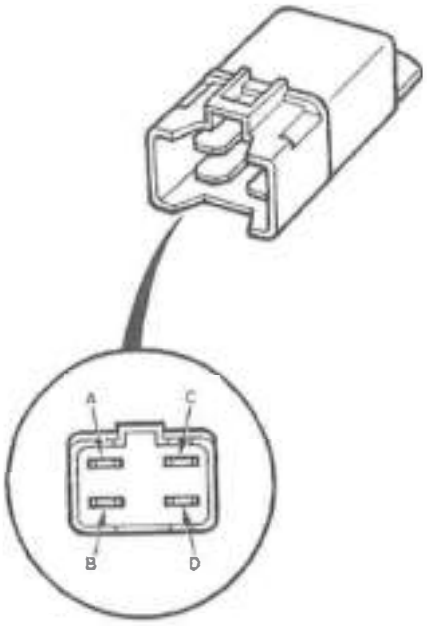
Radiator Fan Relay
Condensor Fan Relay
A/C Compressor Clutch Relay



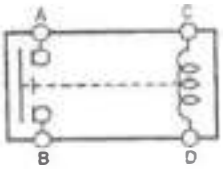
Relay Circuit



Sub-Cooling Fan Relay



Relay Circuit



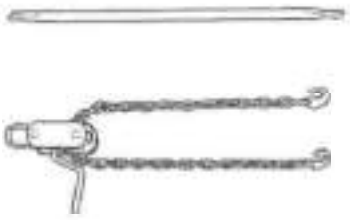
Chapter 5

Engine

- Tools
- Engine Removal Steps
- Engine Removal MT & AT Vehicles
- Engine Mount Torque Specifications
- Timing Belt Component Breakdown
- Timing Belt Removal
- Timing Belt Positioning and Setting
- Cylinder Head & Valve Train Components
- Intake Manifold (Carbureted)
- Exhaust Manifold System
- Rocker Arm Assemblies
- Camshaft Inspection
- Specialty Tools
- Piston-Crankshaft-Cylinder Block Components
- Connecting Rod Bearings
- Piston Pin
- Oiling System
- Oil Pump
- Oil Pump Clearances & Inspection

Specialty Tools

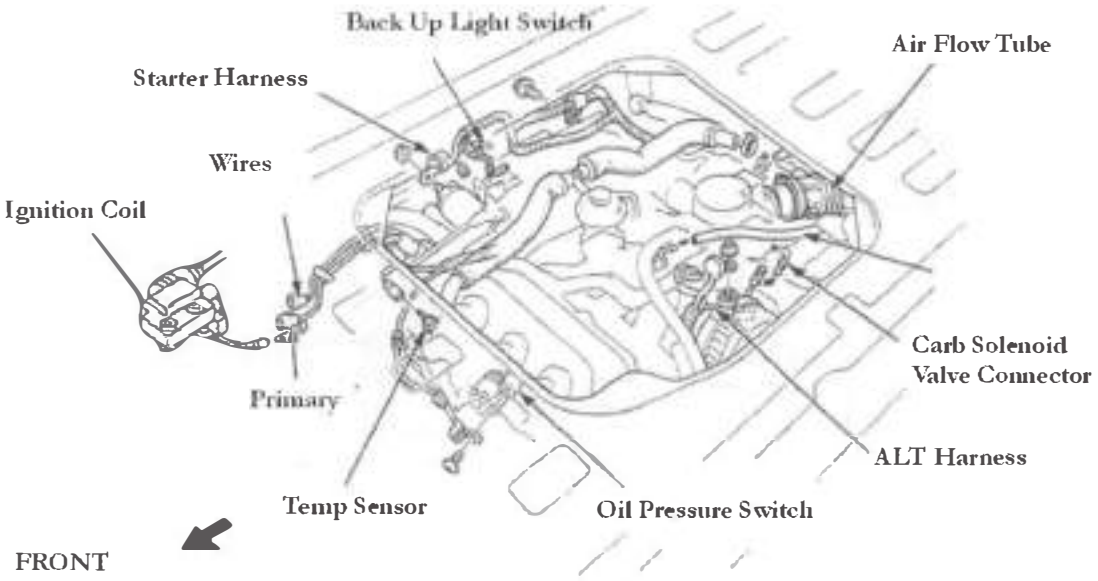
No.	Part #	Tool Name
(1)	07KAK-SJ40100	Engine Hoist
(2)	07966-6800000	Cradle



(1.)

(2.)

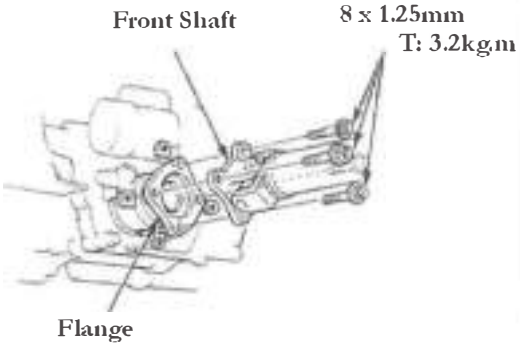
Removal



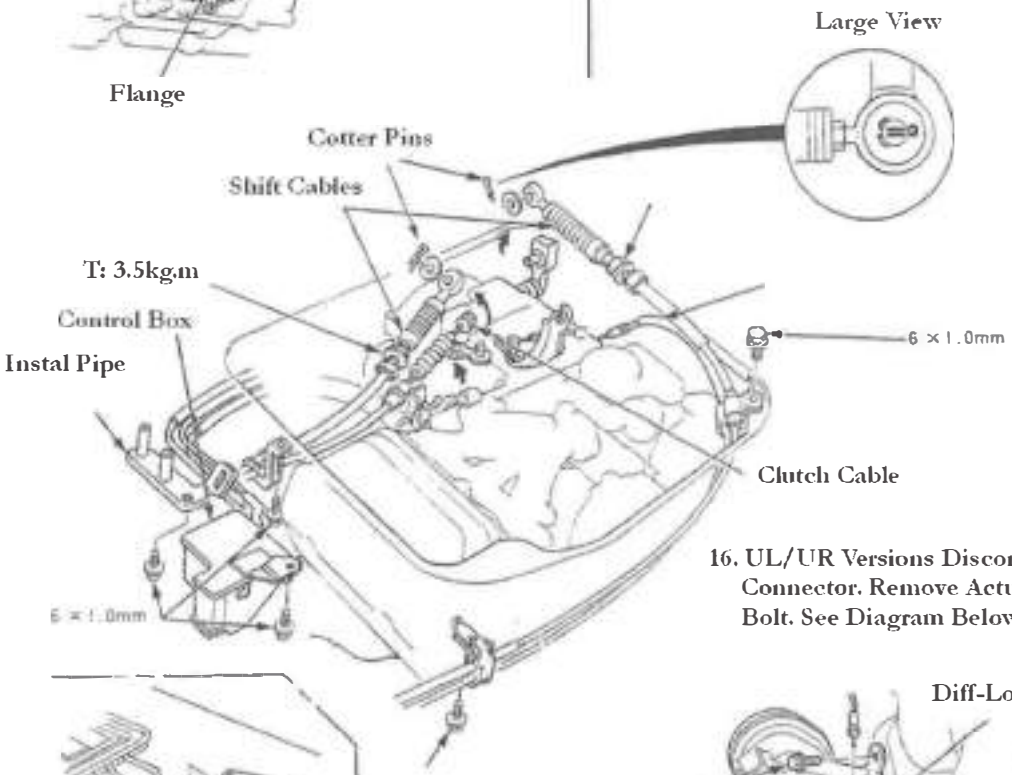
1. Remove Engine Inspection Cover
2. Disconnect Battery and Remove
3. Drain Engine Oil (Do Not Re-Use)
4. Drain Trnasmission Oil Using 9.5mm (3/8") Socket
5. Drain Radiator
6. Disconnet Ingnition Coil and Wires
7. Disconnect Oil Pressure Switch and Temp Sensor
8. Disconnect Starter Harness and Alternator Connctions
9. Disconnect Back- Up Light Switch Connector (MT Vehicle)
10. Remove Engine and Transmission Connections
11. Remove Air Flow Tube and Vacuum Hoses (Mark For Identification)
12. Disconnect Carb Solenoid Connetor

MT/4WD Vehicle

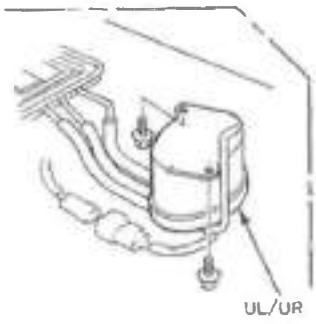
13. (4WD) Remove Shaft (See Below)
14. Remove Clutch Cable and Associated Parts in Diagram

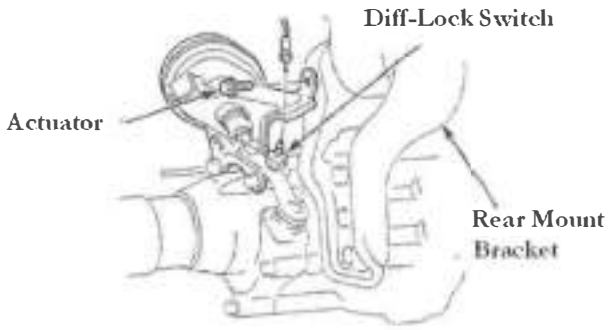


15. Disconnect Emission Control Box (See Bottom Left Diagram) For AC & UL/UR Series Vehicles



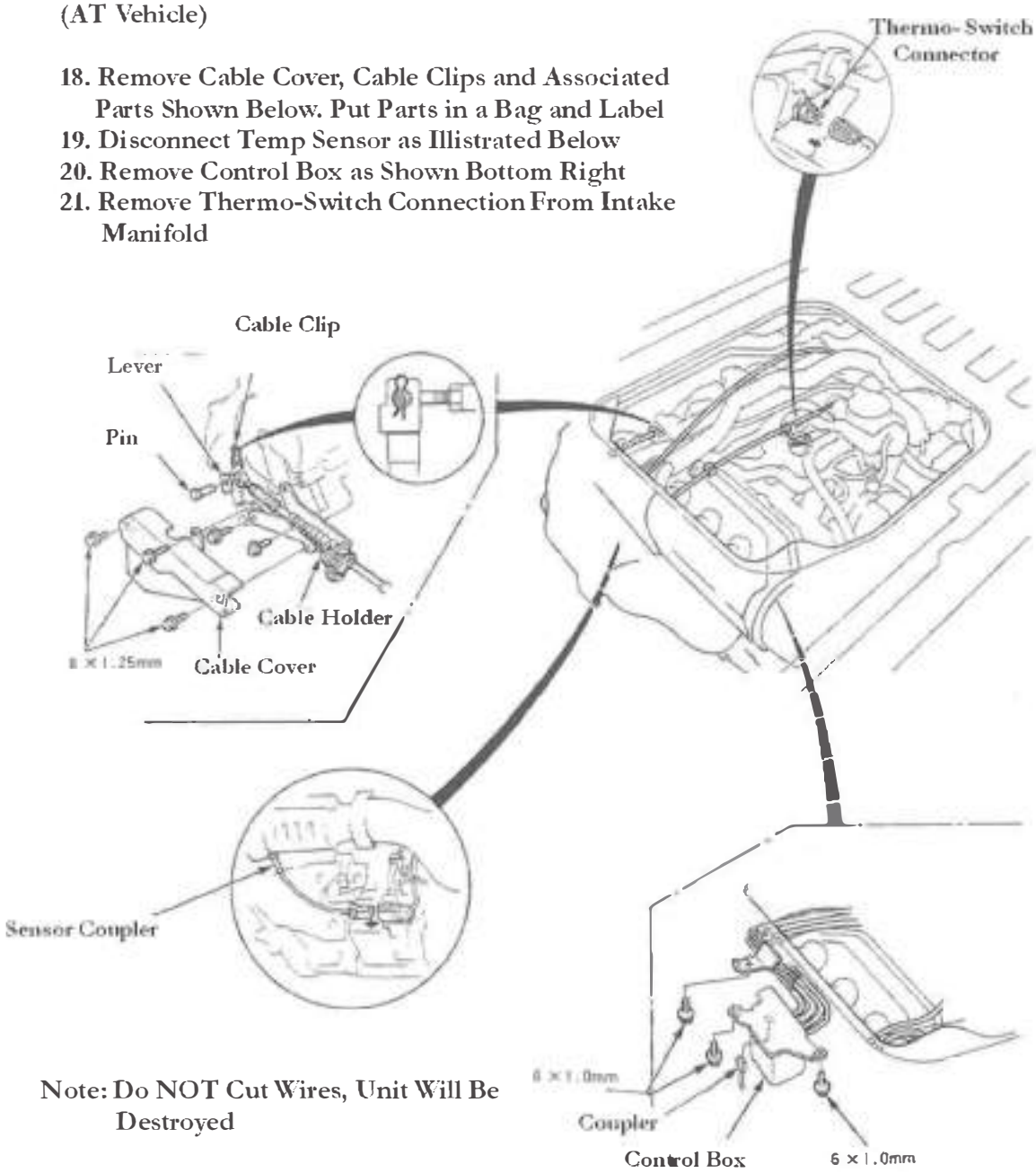
16. UL/UR Versions Disconnect Diff-Lock Connector. Remove Actuator Attachment Bolt. See Diagram Below.





(AT Vehicle)

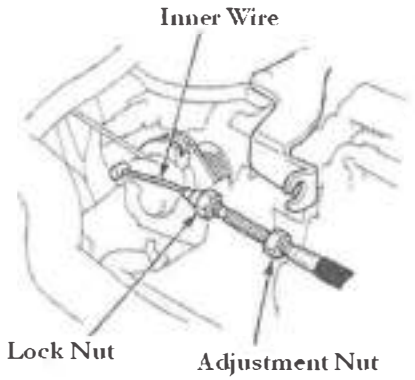
18. Remove Cable Cover, Cable Clips and Associated Parts Shown Below. Put Parts in a Bag and Label
19. Disconnect Temp Sensor as Illistrated Below
20. Remove Control Box as Shown Bottom Right
21. Remove Thermo-Switch Connection From Intake Manifold



Note: Do NOT Cut Wires, Unit Will Be Destroyed

Note: Place All Small Parts in a Bag and Label

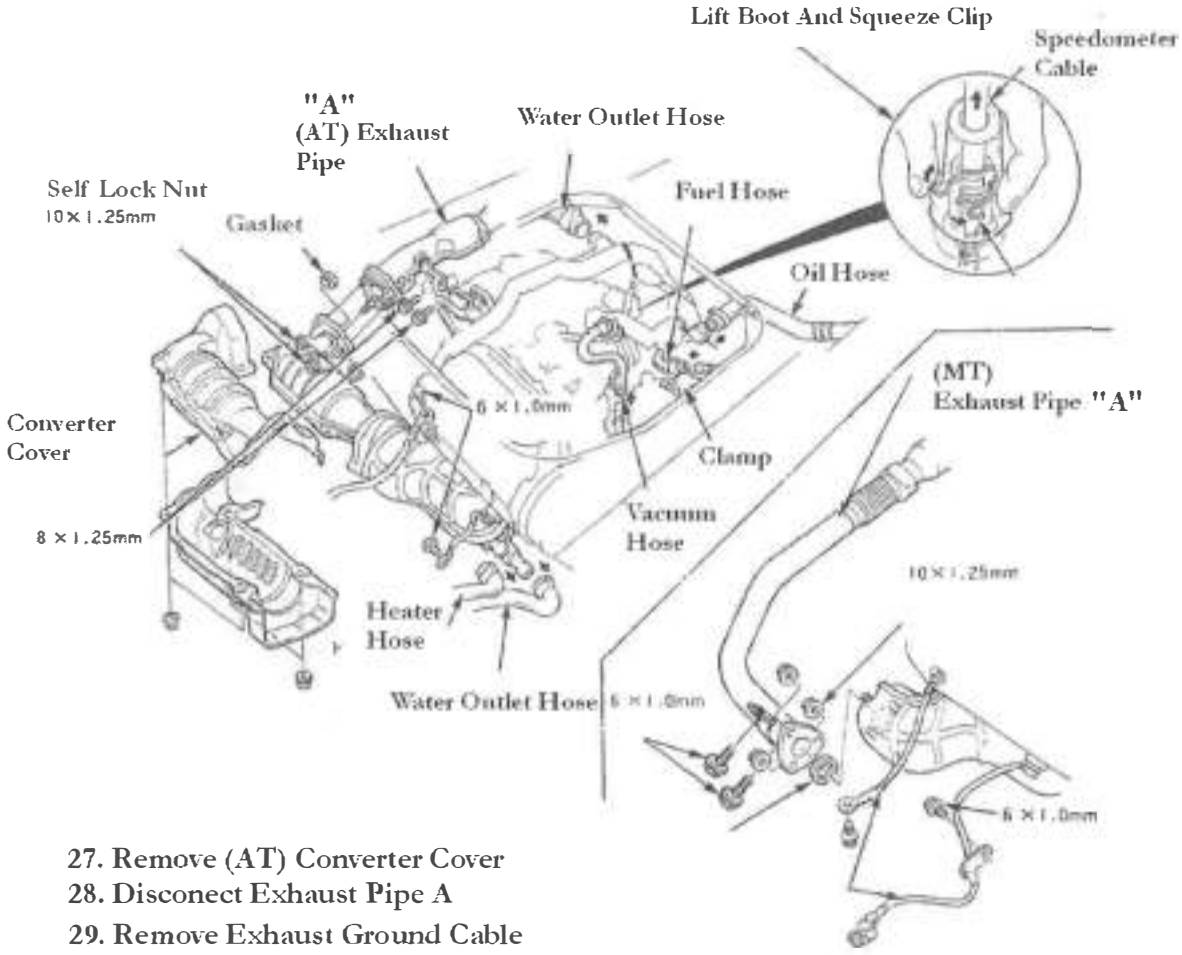
22. Disconnect Throttle Cable
(See Diagram to Right)



23. Disconnect Fuel Hose

Caution: Be Carful When Working Around Fuel

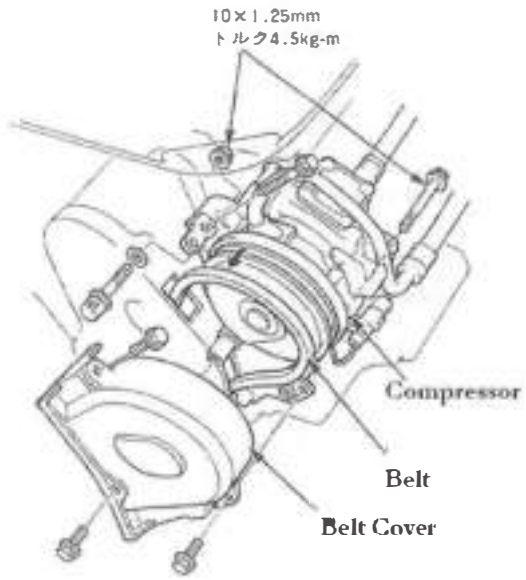
24. Disconnect Brake Booster Vacuum Hose
25. Disconnect Oil Hose
26. Disconnect Speedometer Cable
(See Diagram on Right)



27. Remove (AT) Converter Cover
28. Disconect Exhaust Pipe A
29. Remove Exhaust Ground Cable
30. Water Inlet & Outlet Hose (Including Heater Hose)

AC Equiped Vehicle

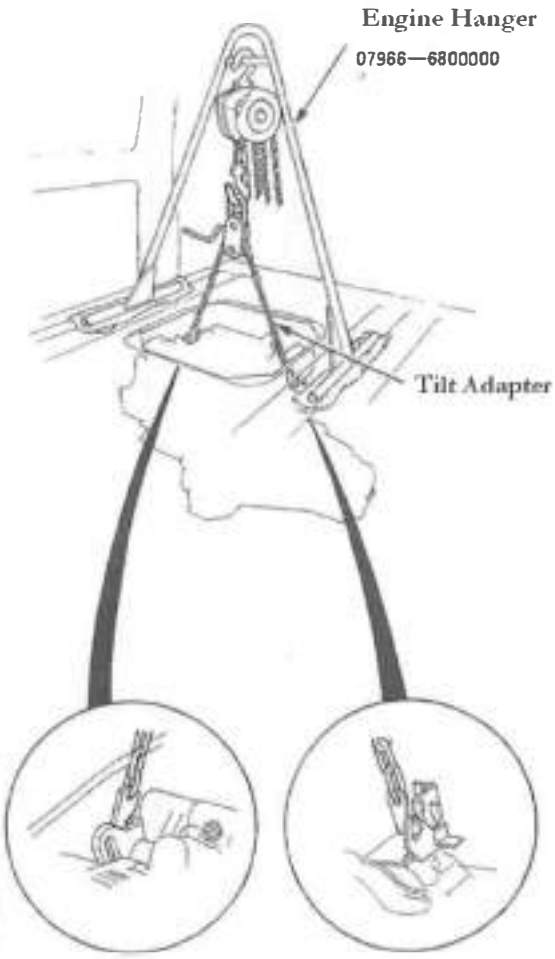
31. Remove Comressor Cover
32. Loosen Belt
33. Unbolt Compressor
    (Do NOT Disconnect Pressure Lines)



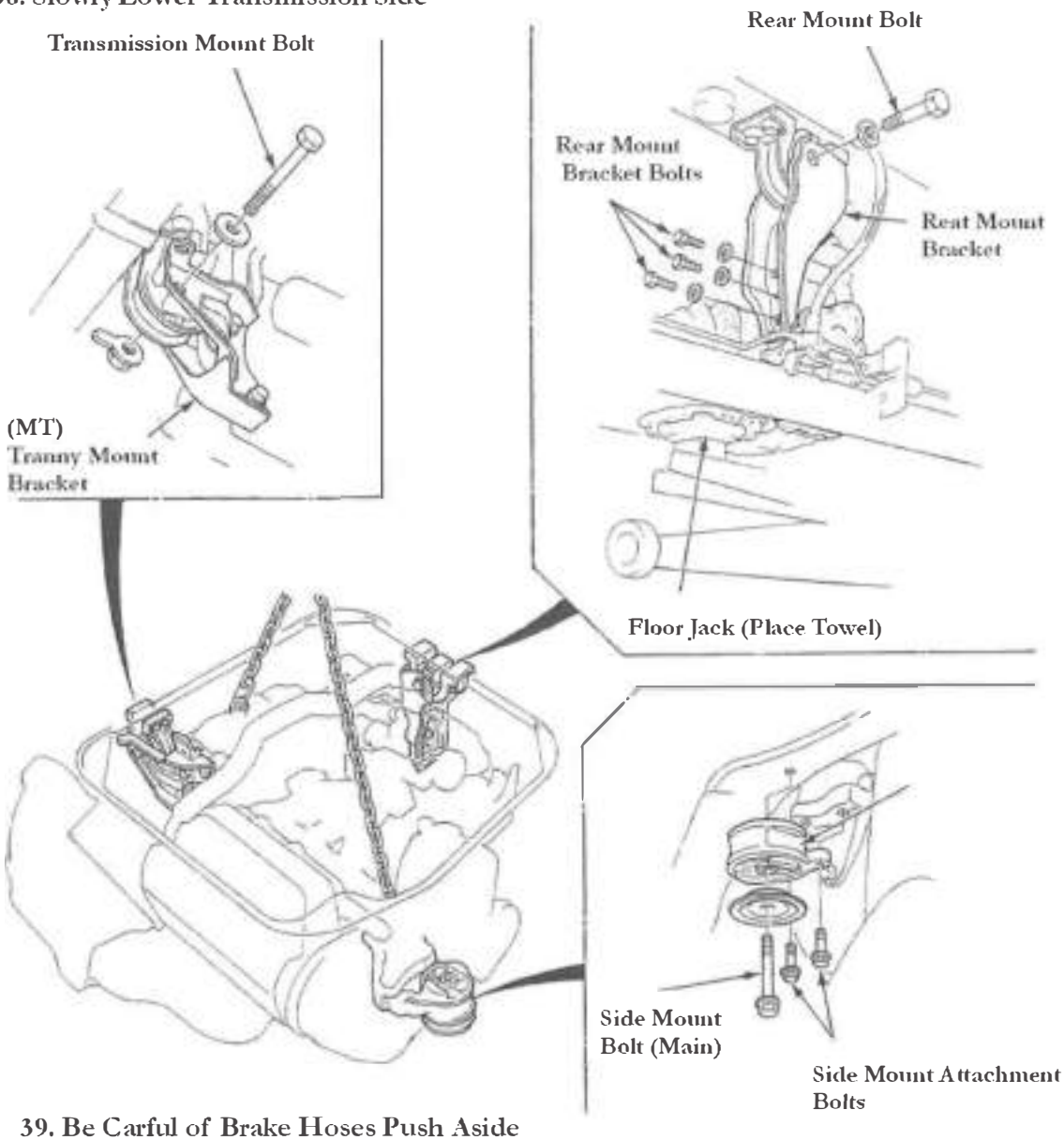
Note: Be Carful Of AC Pressure Lines

34. Remove Compressor and Hang to Side With Tie Straps

35. Attach Engine Hoist and Chain to Lift Points in Diagram Below



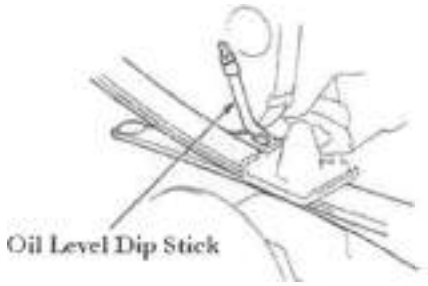
36. Remove (3) Rear Side Mount Bracket Bolts
37. Remove Transmission Mount Bolt
38. Slowly Lower Transmission Side



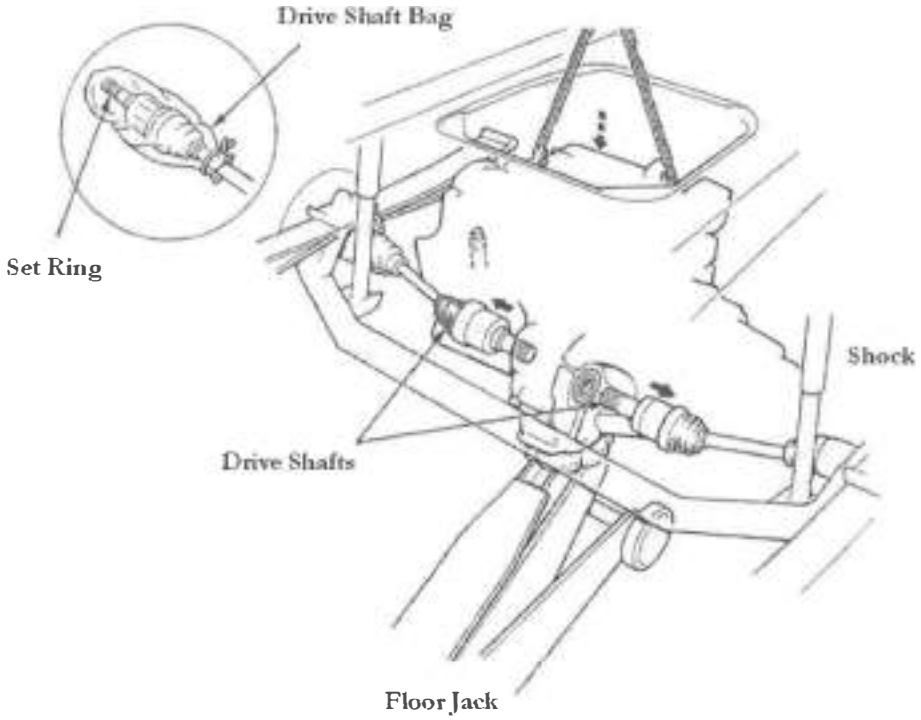
39. Be Carful of Brake Hoses Push Aside
40. Remove Rear Mount Bolt
41. Remove Remaining Attachment Bolts

42. Remove Drive Shafts and Cover
43. Lower Engine
44. Remove Engine

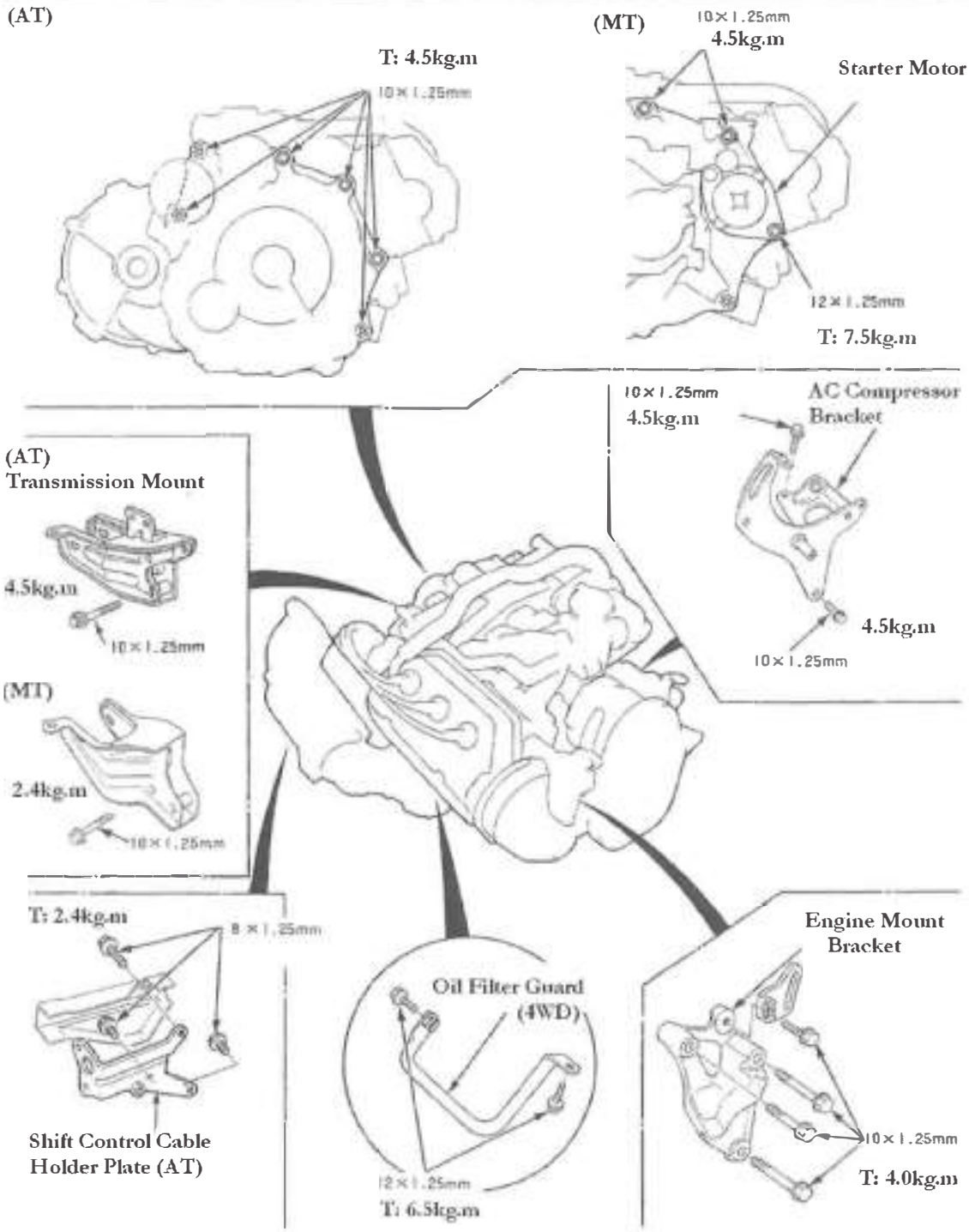
Note: Be Carful When Lowering Engine of Dip Stick



Note: Place Rags and Plastic Bag Over Shafts to Protect Units



Mount Torque Specifications



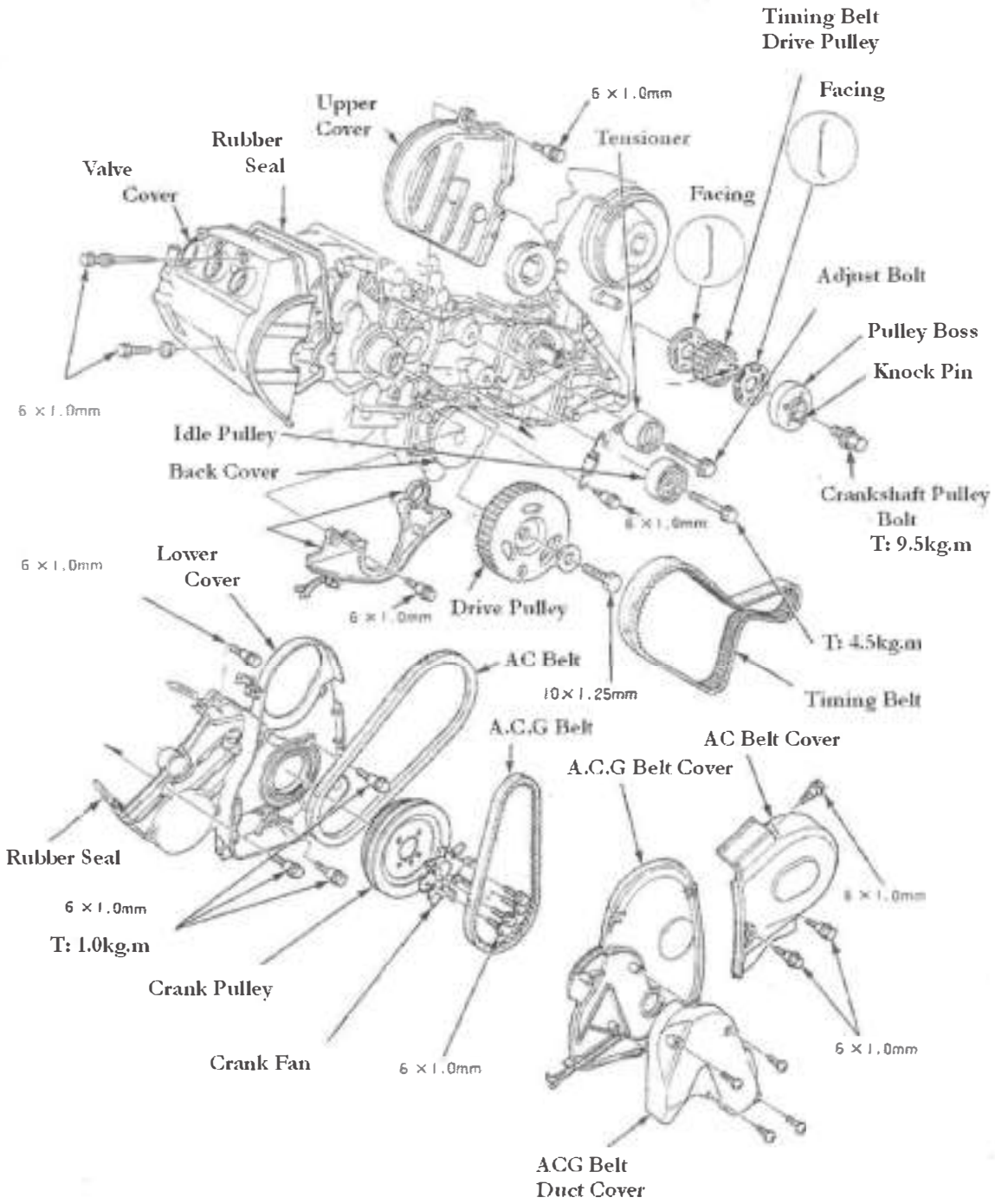
Timing Belt Setting Special Tools

No.	Part Number	Part Name	Use
(1)	07JAB-PN40100	Pulley Holder	Hold Crank Set Torque

(1.)

Crankshaft Holder Tool

Complete A/C & Non-A/C



Exploded View

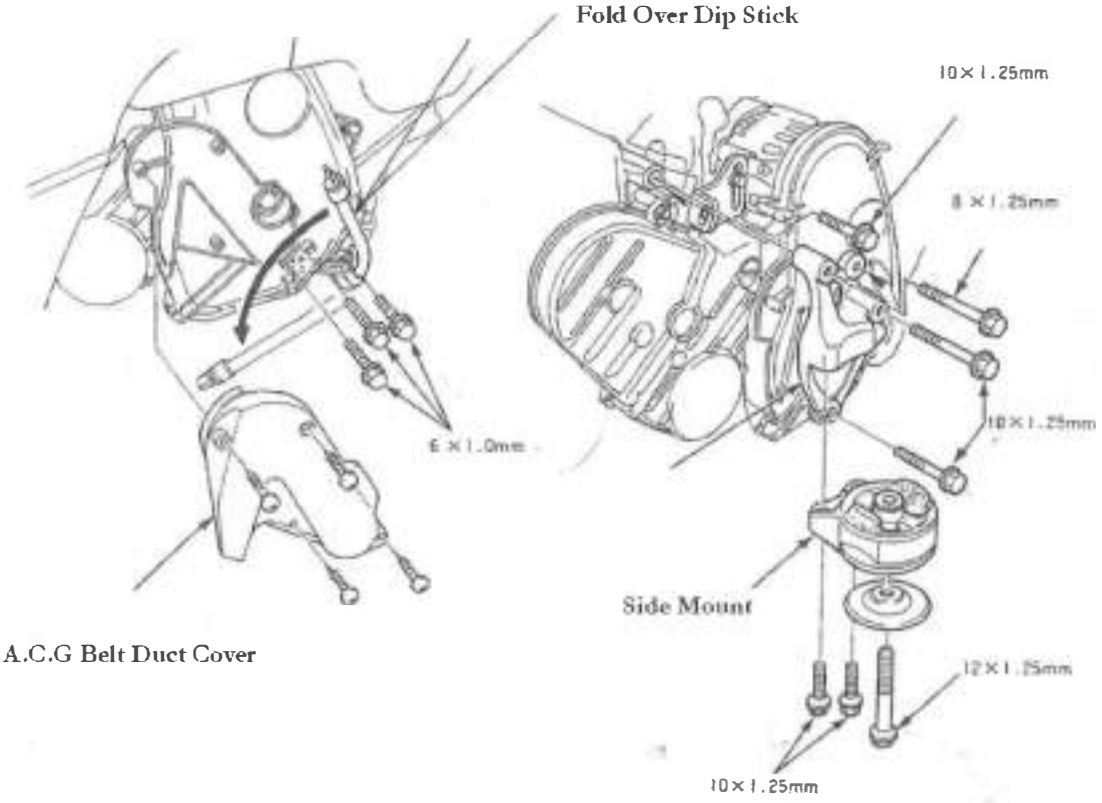
Timing Belt Removal

Note: Before Disassembly Set Cylinder #1 to TDC

1. Remove A.C.G Belt Cover
2. Remove Dip Stick Tube Attachment Bolt

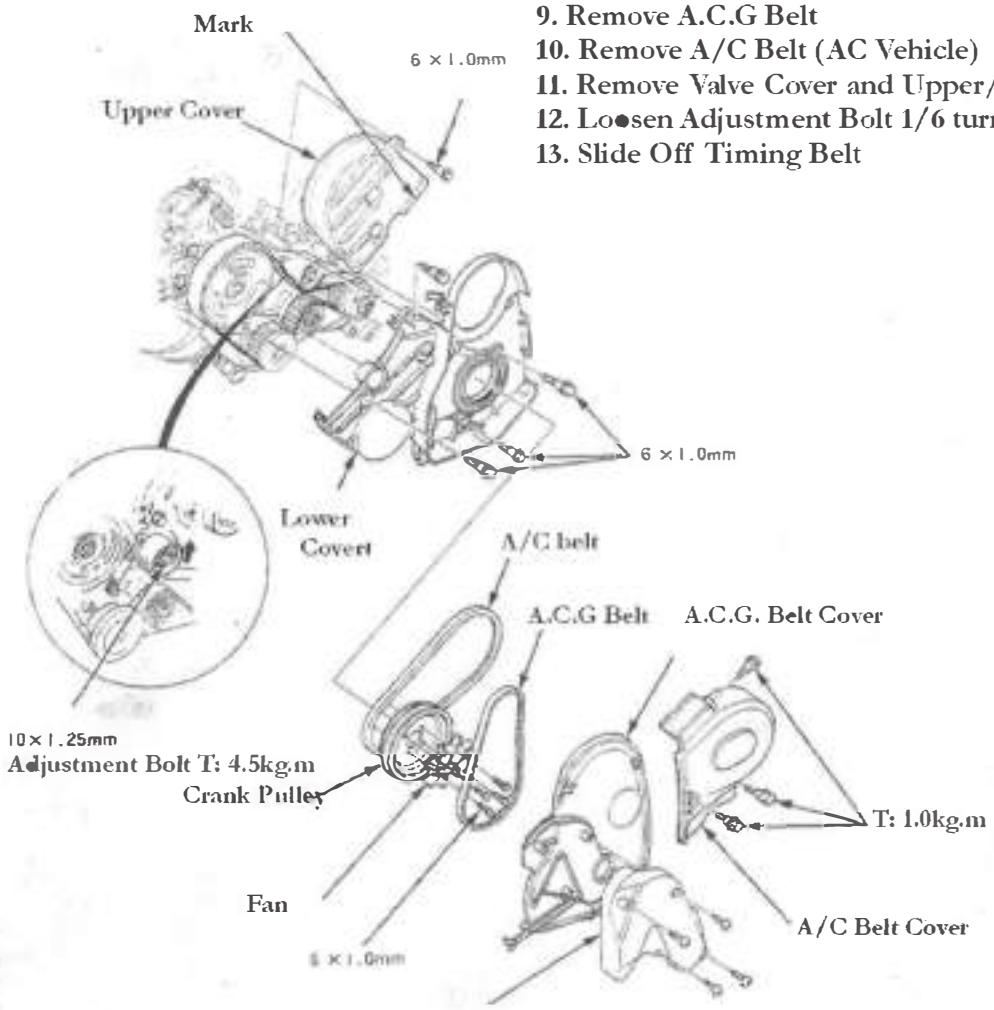
Caution: Turn Dip Stick Tube to Left as in Diagram Below
Do NOT Remove Pipe (Tube)

3. Place a Jack Under Engine and Lift Up Slightly
   Note: Use Rag On Jack Pad Not to Damage Oil Pan
4. Remove Side Mount Bolt
5. Remove Side Mount
6. Remove Side Mount Braket (See Diagram Below)



Timing Belt Removal

7. Remove A.C.G Belt Cover
8. Remove A/C Belt Cover (AC Vehicle)
9. Remove A.C.G Belt
10. Remove A/C Belt (AC Vehicle)
11. Remove Valve Cover and Upper/Lower Covers
12. Loosen Adjustment Bolt 1/6 turn (60*)
13. Slide Off Timing Belt



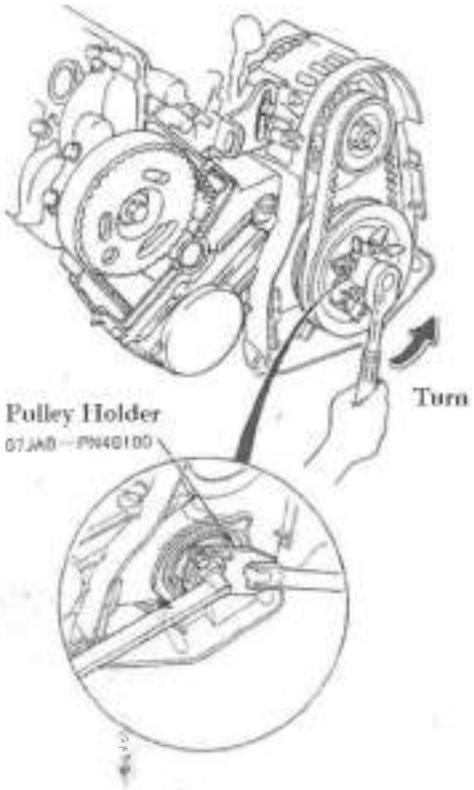
A.C.G. Belt Duct Cover

Note: Do Not Re-Use Timing Belt if Over 68,000 Kilometers

Note: Timing Belt Must Be Changed at 100,000 Kilometers

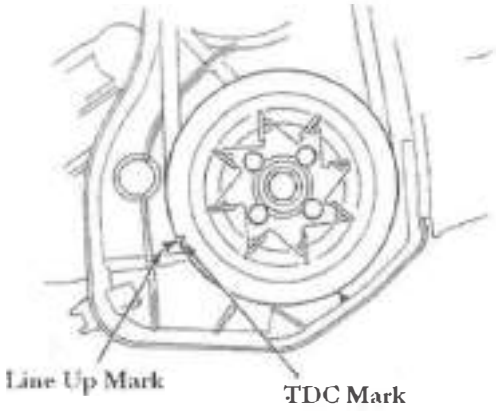
Note: Before Replacing A/C & A.C.G Belts Check for Wear
A/C & A.C.G Belts Should Replaced 68,000 Kilometers

Use Pulley Hoder and Torque Wrench to Set Torque.
T:=9.5kg.m

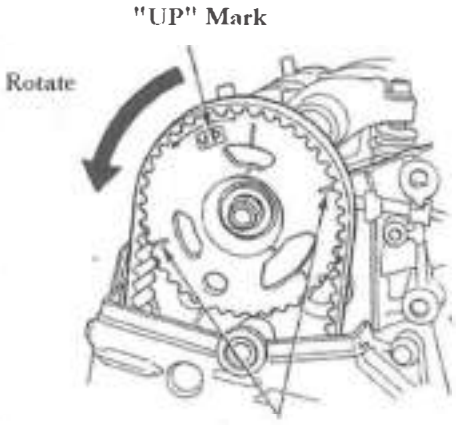


Note: Rotate Only In Direction Shown

Line Up Crakshaft Pulley and Mark



Line Up Top Pulley and Marks



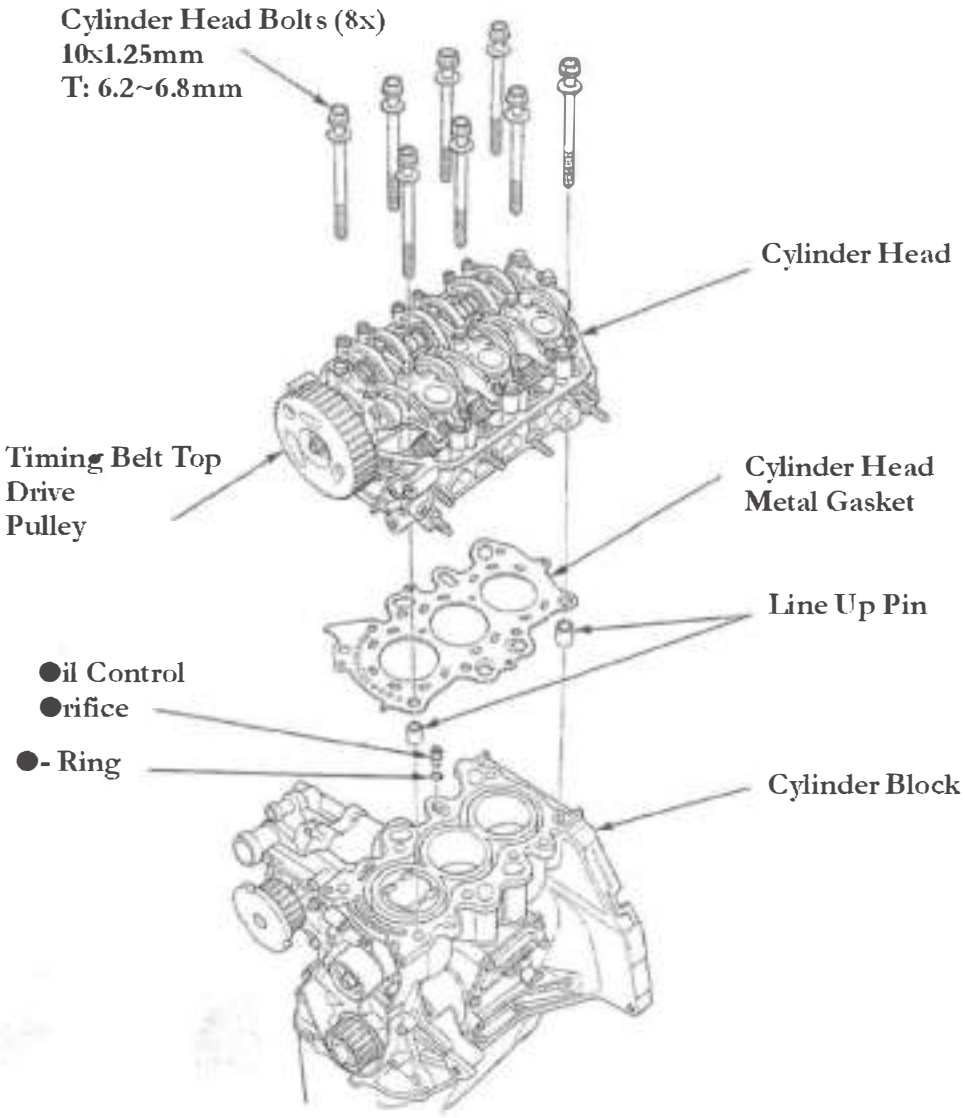
Note: UP Mark is #1 Cylinder, All Marks Should Line Up like Diagram

Assemble and Check Vavle Clearance

Note: Always Use Metal Head Gasket

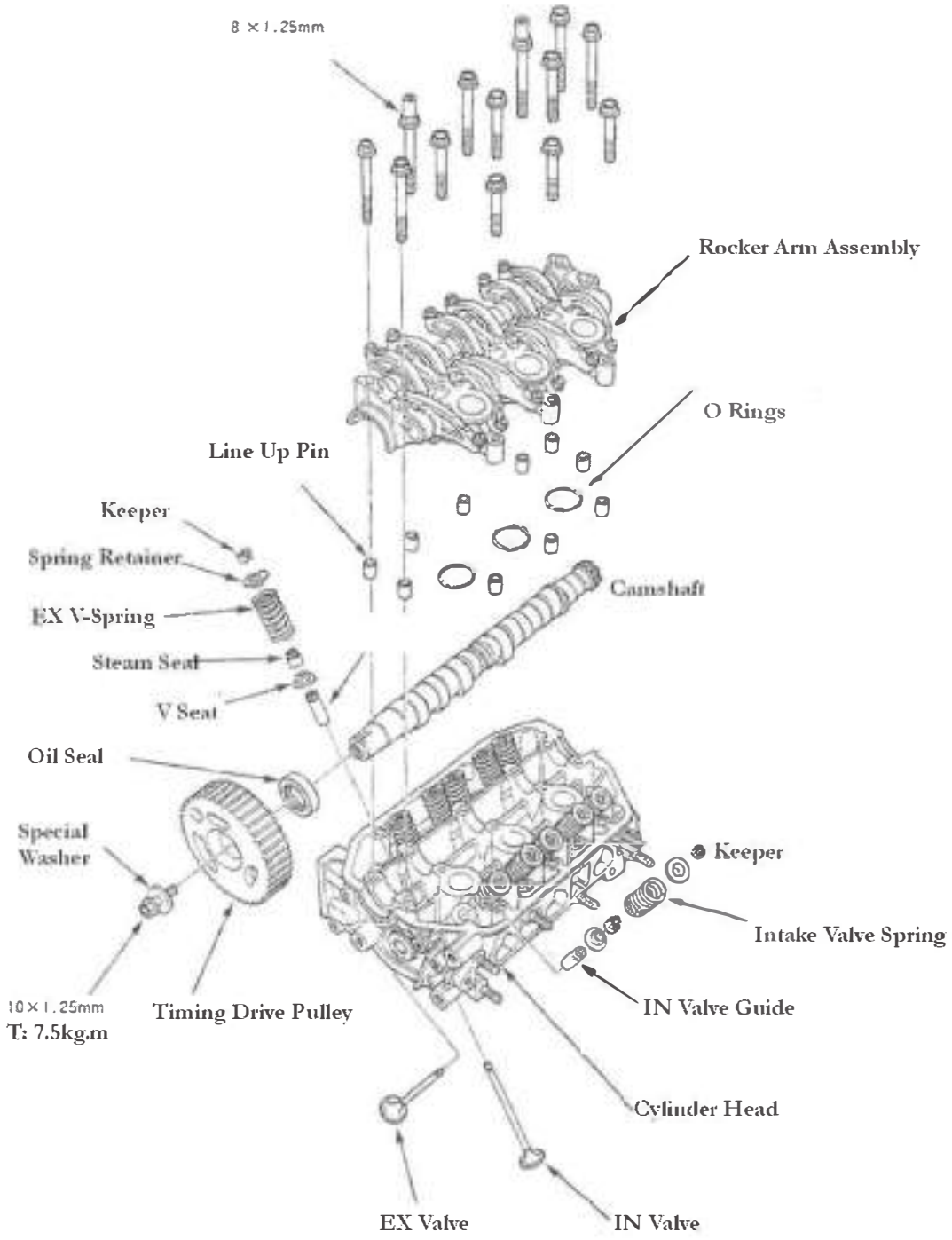
Note: Never Re-Use ●-Rings

Exploded View



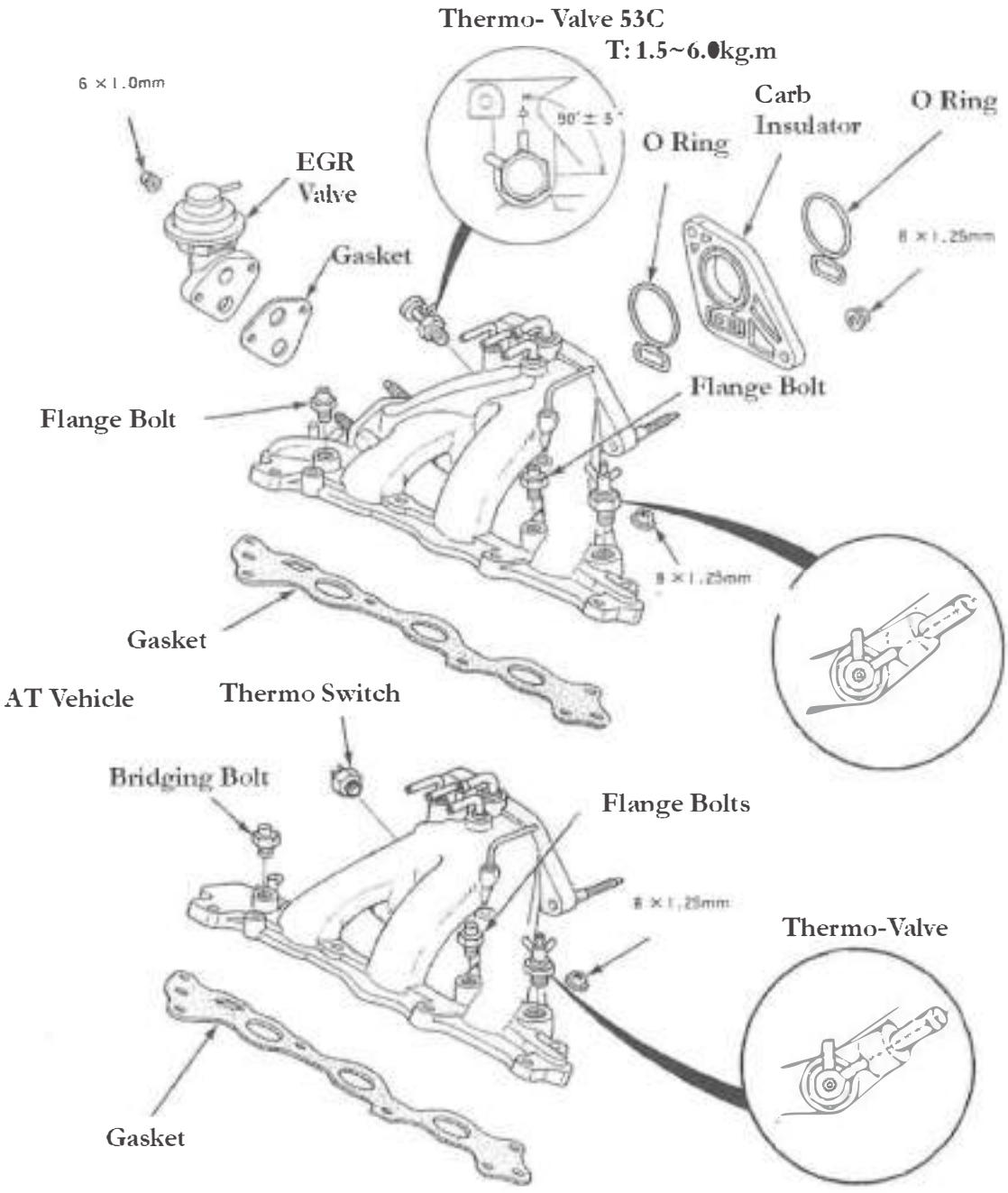
Cylinder Head & Valve Train

Exploded View



Intake Manifold (Carbureted)

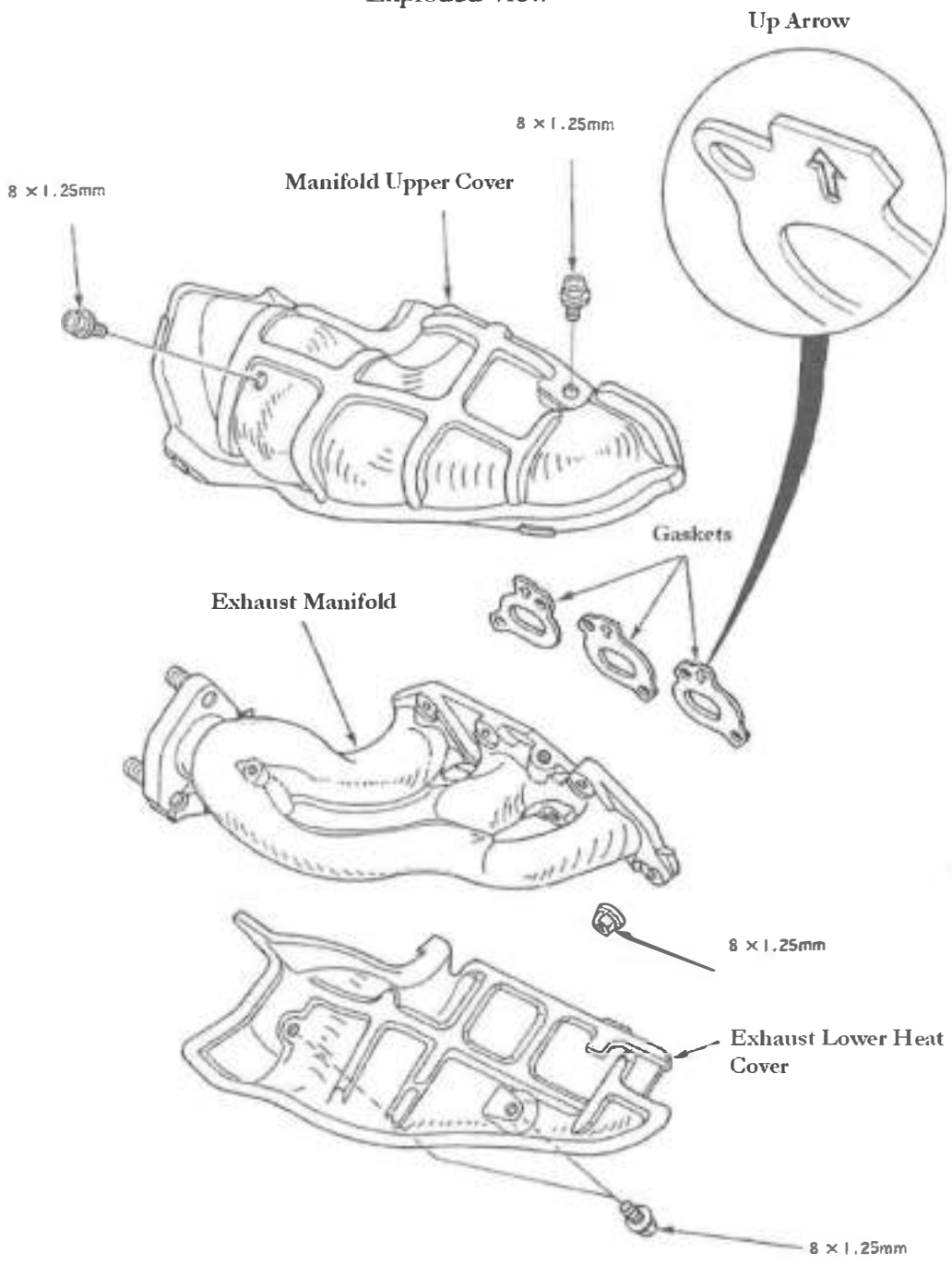
MT Vehicle



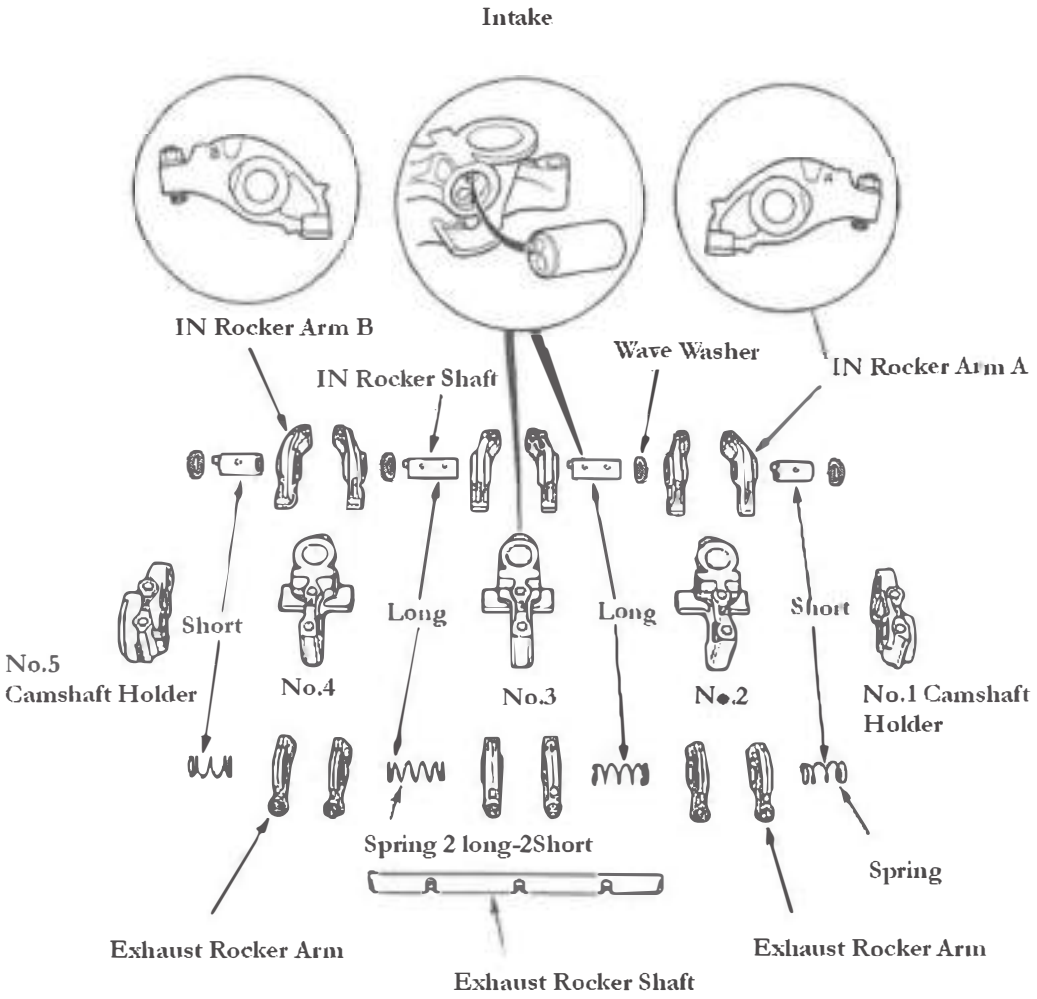
Note: Fuel Injected Manifold See Fuel Section

Exhaust Manifold

Exploded View



Rocker Arm Assemblies



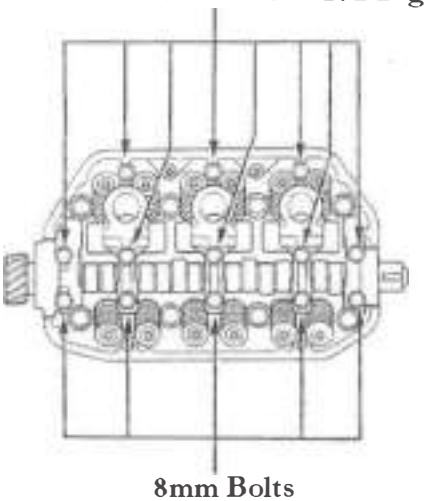
Note: For Detailed Specifications See Service Data Section

Cylinder Head and Drive Train

Camshaft

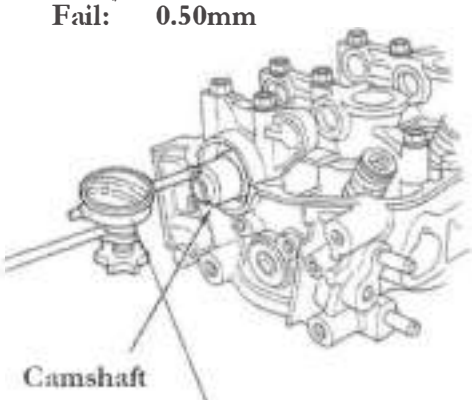
To Remove Camshaft Remove Bolts Shown Below

8mm Bolts T: 2.2kg.m



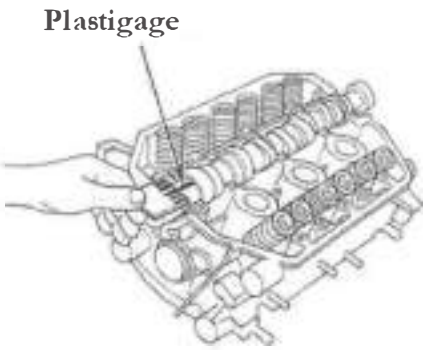
8mm Bolts

Camshaft End-Play
Range: 0.05~0.015mm
Fail: 0.50mm



Oil Clearance

To Check Clearance Remove Camshaft Holders. Use a Plastigage as Shown Below



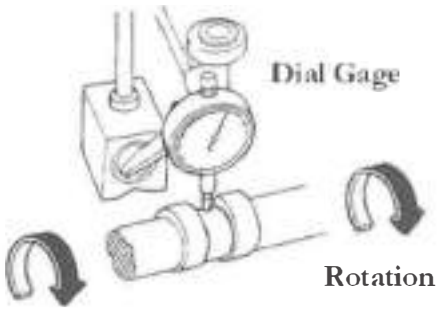
Oil Clearance

Range: 0.050~0.089mm
Fail: 0.150mm

Note: For Detailed Specifications See Service Data Section

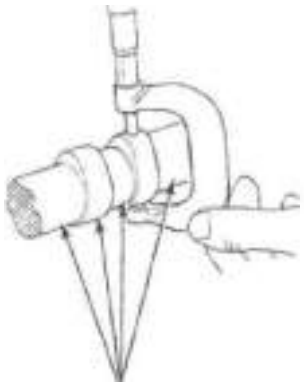
Cylinder Head and Valve Train

Camshaft Round-Out



Range: 0.015mm
Fail: 0.030mm

Camshaft Lobe Measurment



Note: Uneven Wear, Pitting is Found
Replace Camshaft

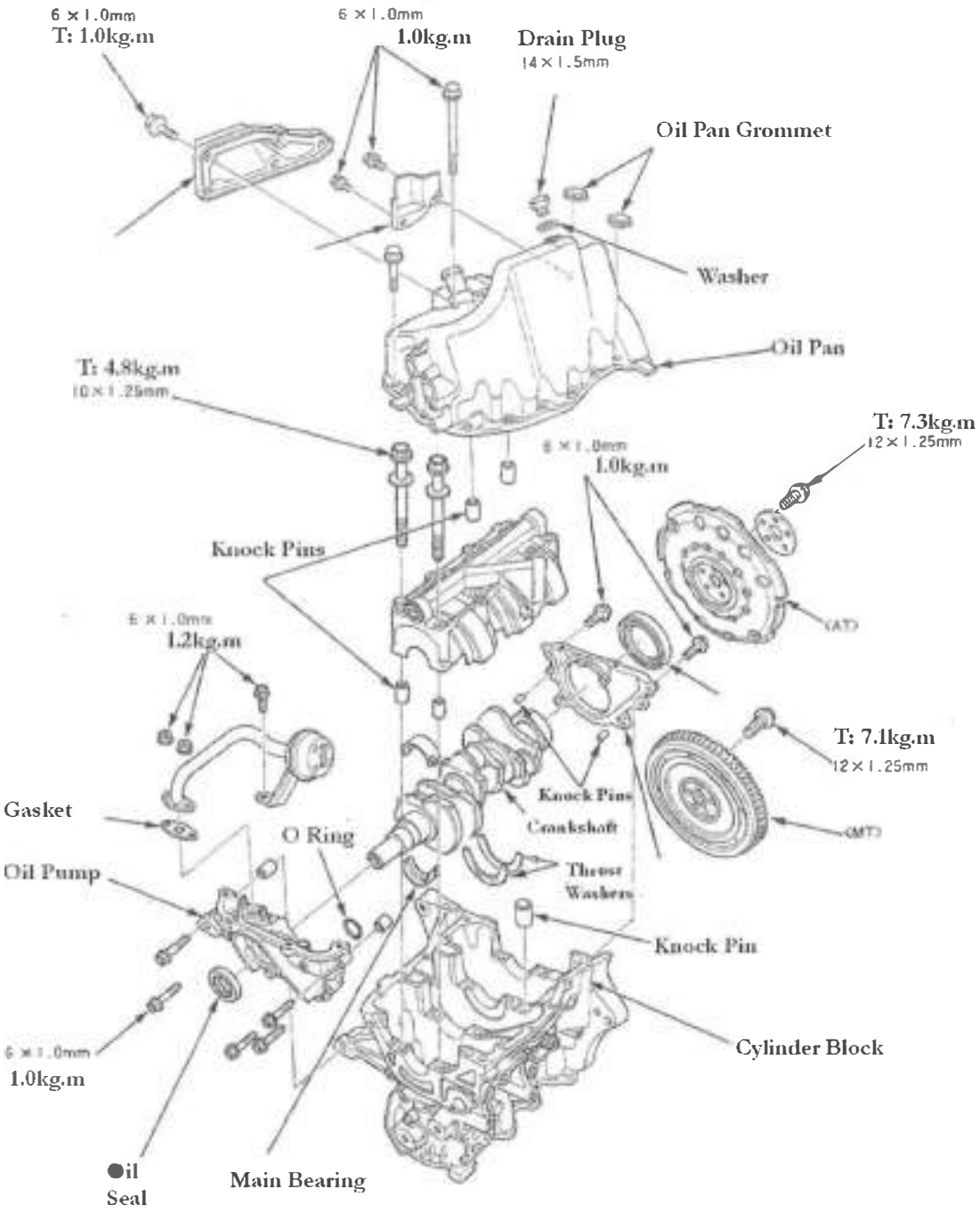
Range: Intake Lobe 35.122mm
Exhaust Lobe 33.944mm

Note: Camshaft Can Not Be Reground

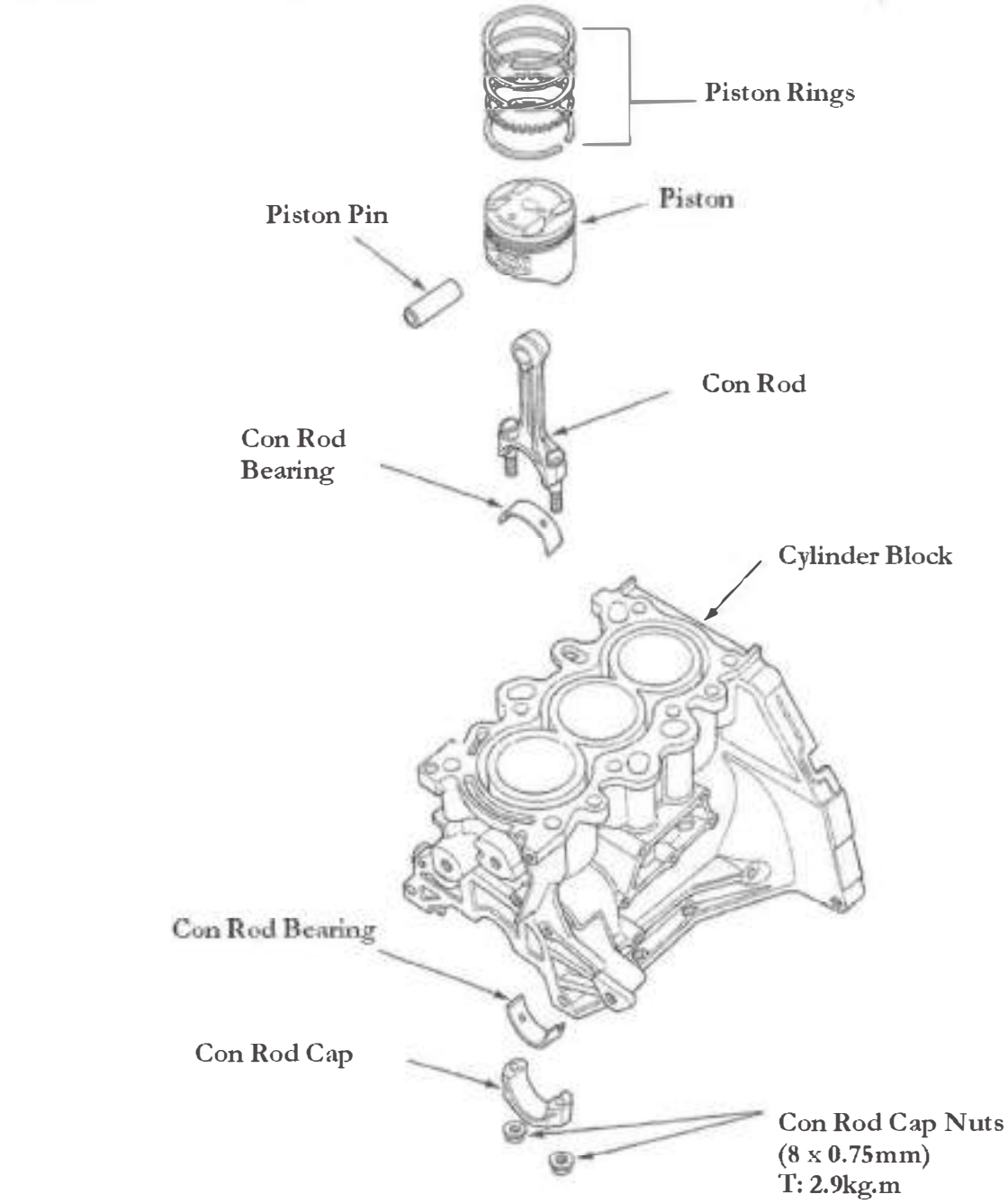
Specialty Tools

1. 07973-6570500 Piston Base
2. 07973-6570600 Piston Base Spring
3. 07JAF-PN40101 Piston Base Head
4. 07973-SA70100 Drive Pin Inside Attachment
5. 07973-SA70200 Adjustable Inside Attachment
6. 07LAF-PZ10200 Pilot Collar

Exploded View



Engine Block Exploded View

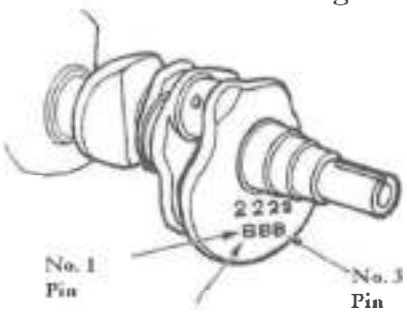


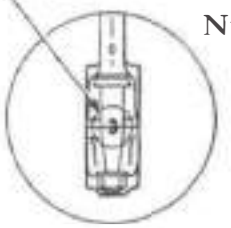
Connecting Rod Bearings

Note: When Changing Connecting Rod Bearings You Must Check The Information Marked on the Crankshaft

Crankshaft Pin Marks	Con Rod Markings			
	1	2	3	4
	Bearing Indication			
A	Red	Peach	Yellow	Green
B	Peach	Yellow	Green	Brown
C	Yellow	Green	Brown	Black
D	Green	Brown	Black	Blue

Crankshaft Markings





Note: Bearing Central Wall Thickness 1.5mm

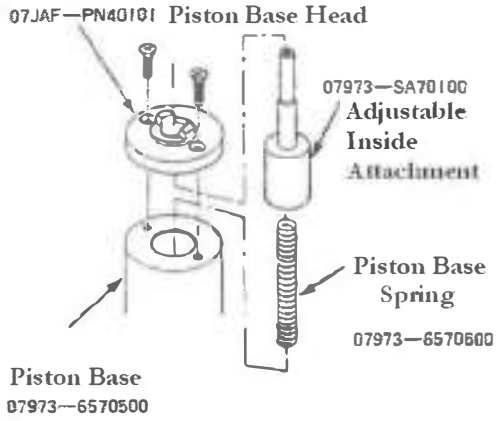
Mark	Color	Measurement
G	Red	−0.005 – −0.008mm
F	Peach	−0.002 – −0.005mm
E	Yellow	+0.001 – −0.002mm
D	Green	+0.004 – +0.001mm
C	Brown	+0.007 – +0.004mm
B	Black	+0.010 – +0.007mm
A	Blue	+0.013 – +0.010mm

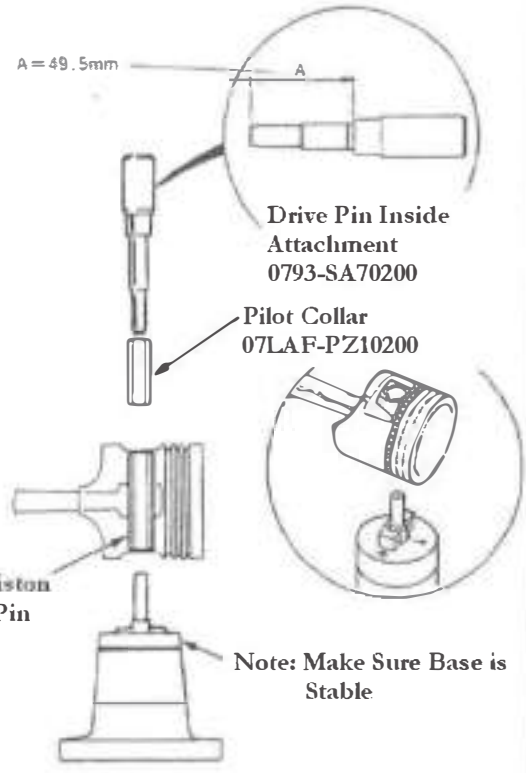
Line Up With Cap Point

Piston Pin

Disassembly

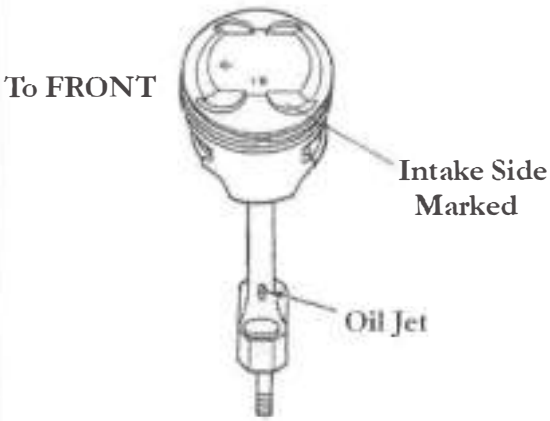
Note: A High Pressure Press Is Required For Removing & Installing Pins



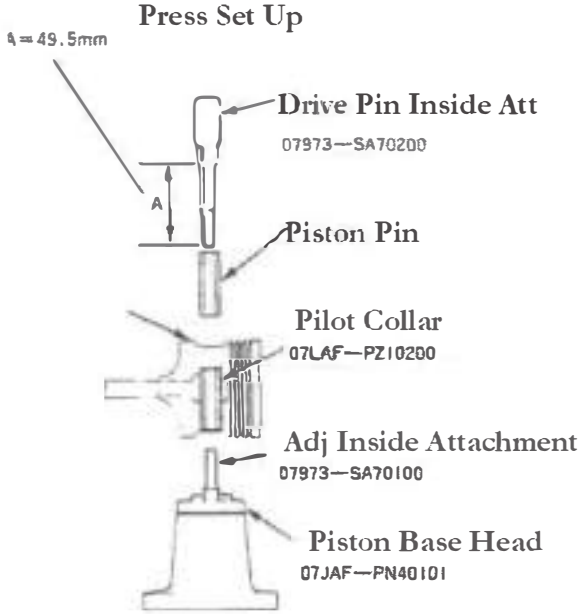


Using The Above Mentioned Tools and Press Remove Pins

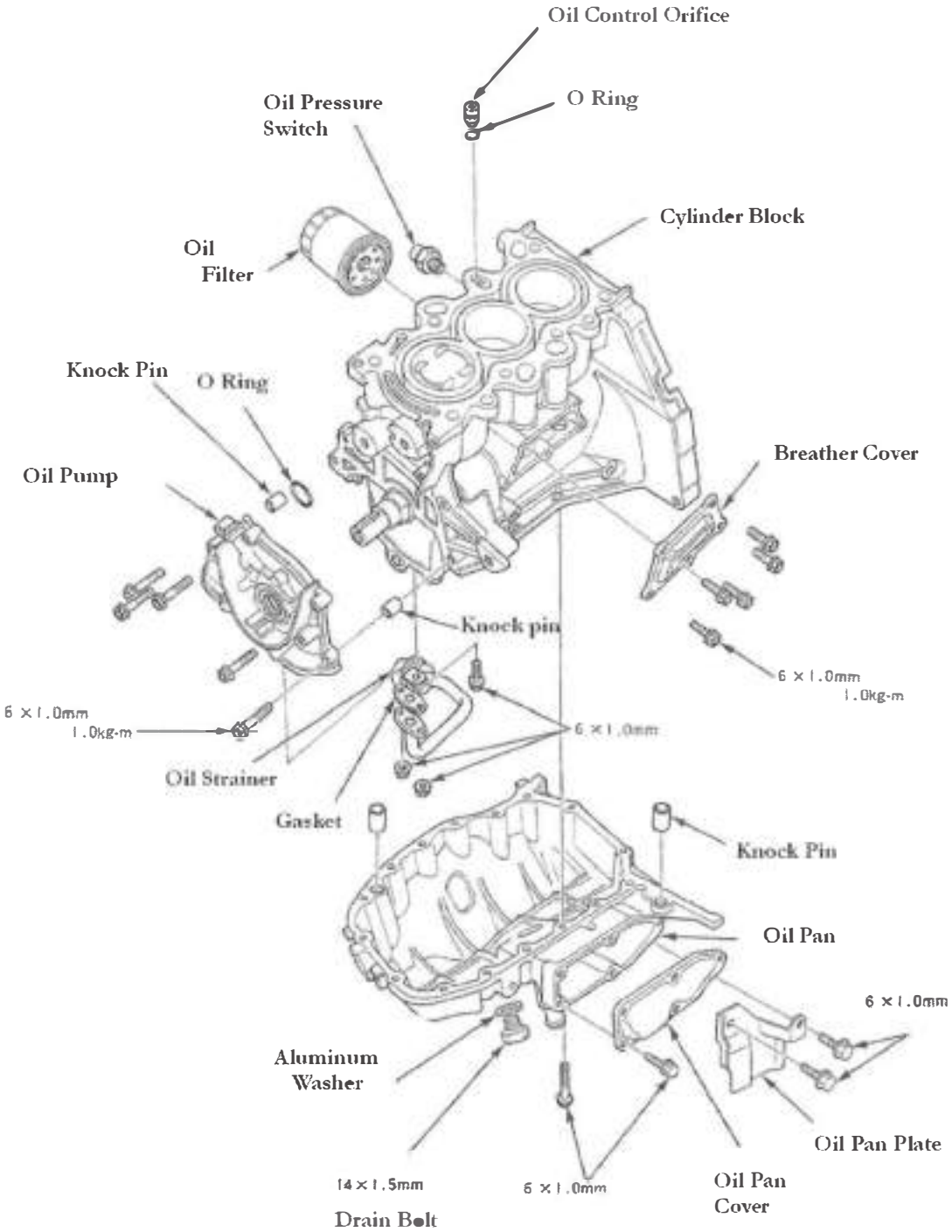
Assembly



Press Set Up



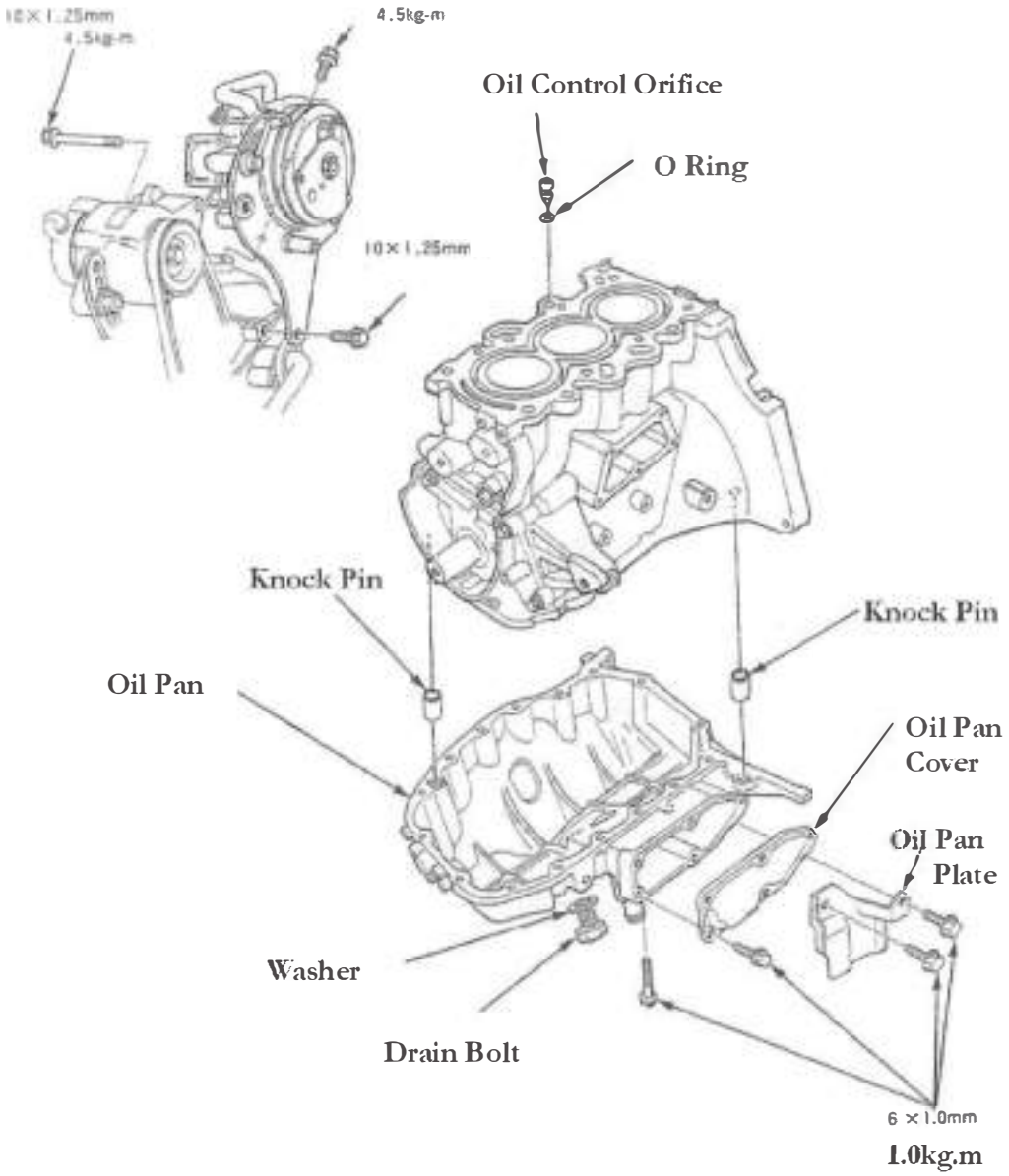
Note: While Attaching or Pressing Piston Pins Pay Attention to Proper Setting



Oil Pan Removal

1. Drain Oil & Remove Oil Filter
2. Remove Driveshaft
3. Loosen A.C.G & AC if Equiped
4. AC Vehide: Remove AC Bracket and Move Away Compressor (Dont Disconnect)
5. Remove Oil Pan PlateRemove Transmission Attachment Bolt
6. Remove All (16) Oil Pan Bolts
7. Assemble in Reverse Order

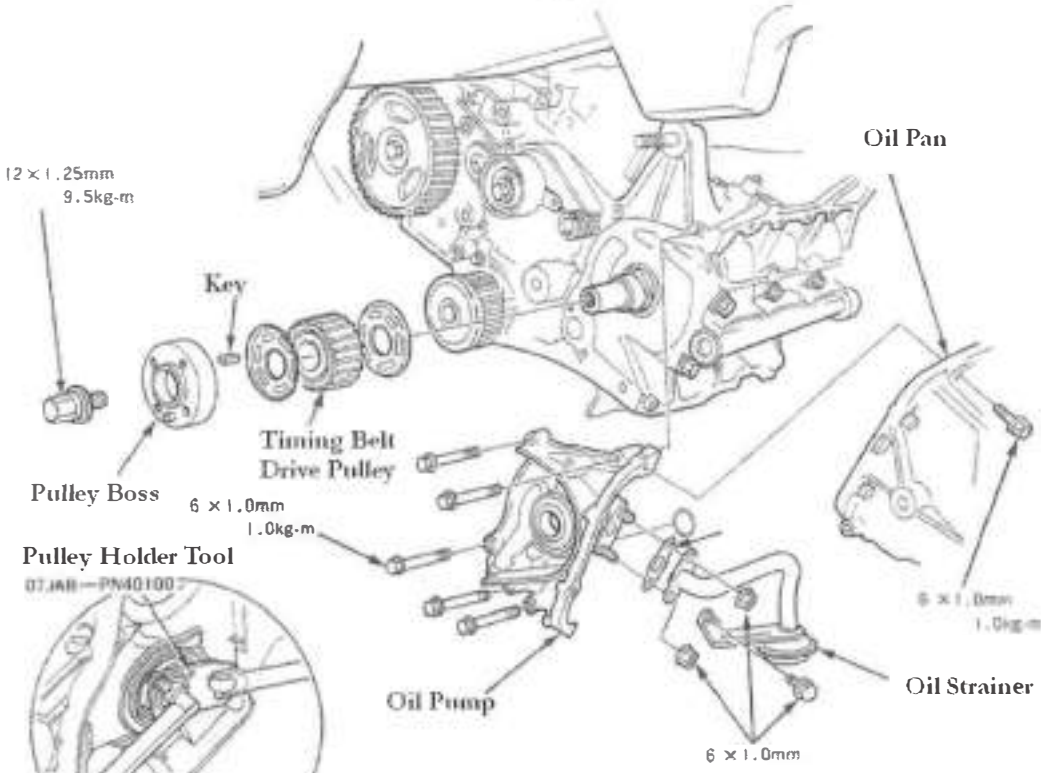
Note: Do Not Re-Use Gaskets or Seals

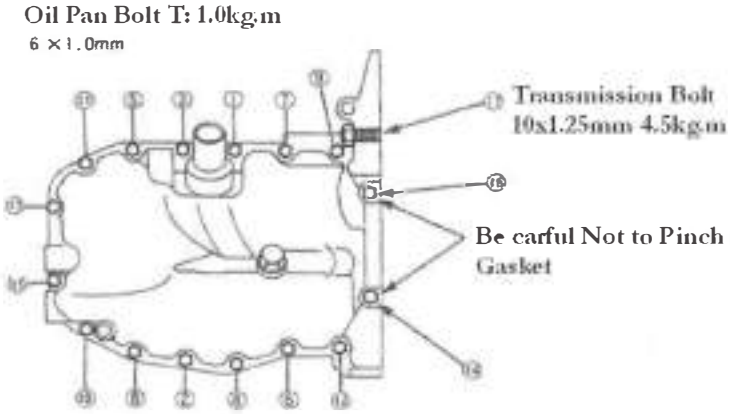


●il Pump Removal

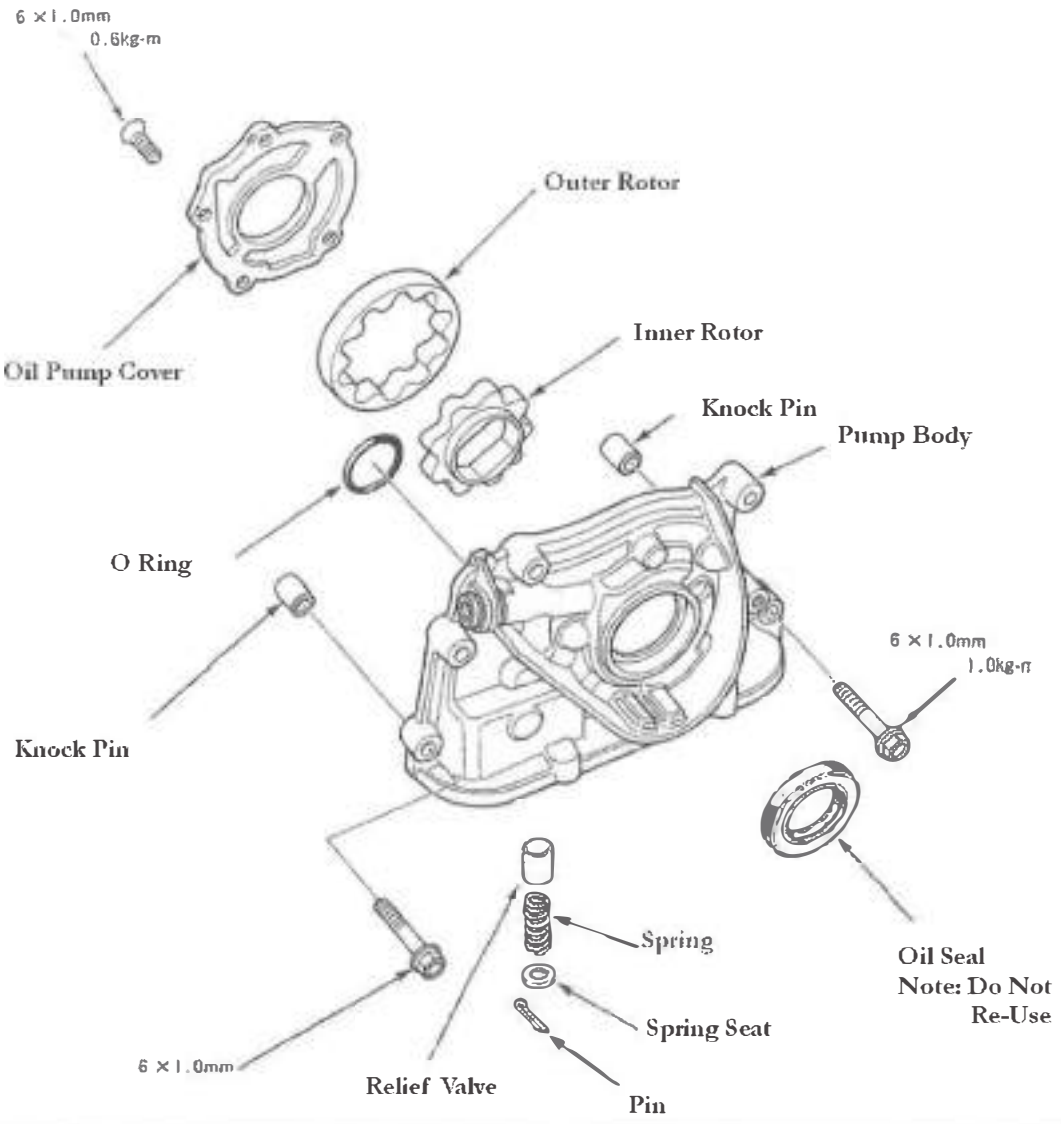
1. Remove Timing Belt
2. Remove Idler
3. Remove Remove Timing Belt back Cover
4. Drain Oil and Remove Oil Pan
5. Remove Oil Strainer
6. Remove (5) Oil Pump Retaining Bolts
7. Remove Oil Pump

Note: See Next Section For Oil Pump Breakdown





Oil Pump Diagram



Inner Rotor & Outer Rotor Clearance
Range: 0.14mm
Fail: 0.20mm

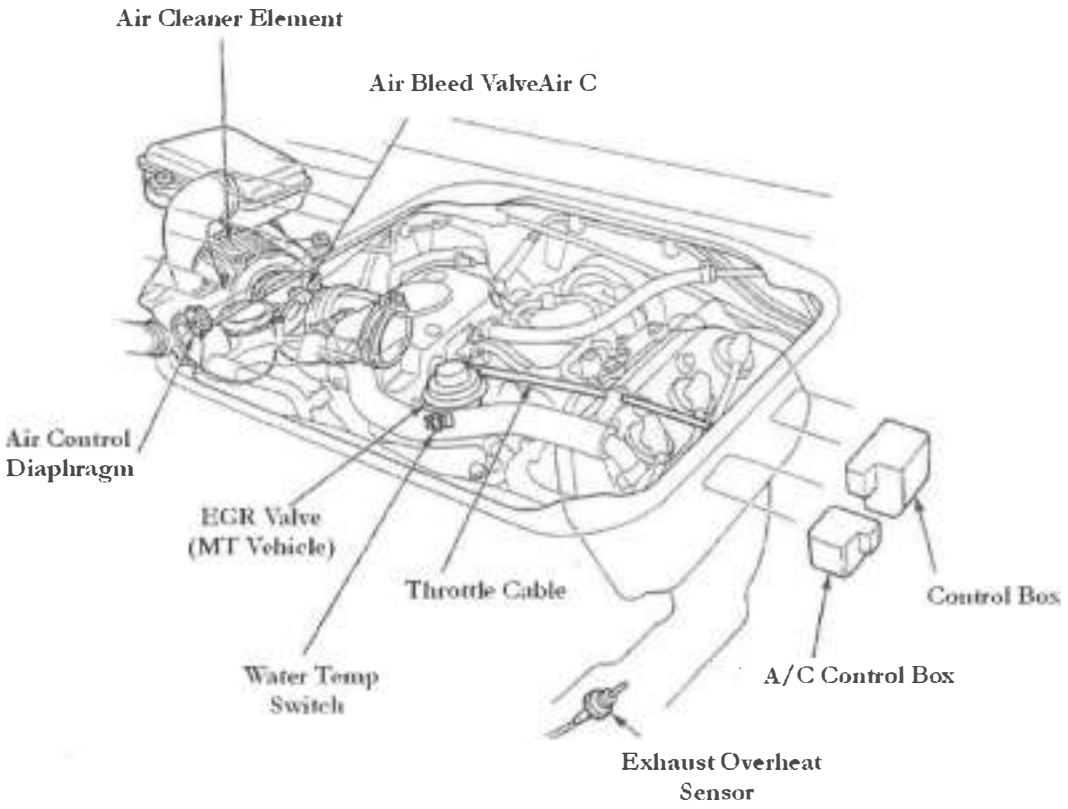
Outer Rotor & Body Clearance
Range: 0.100~0.175mm
Fail: 0.200mm

Rotor & Side Body Clearance
Range: 0.03~0.08mm
Fail: 0.15mm
Note: Use Straight Edge & Feeler gage

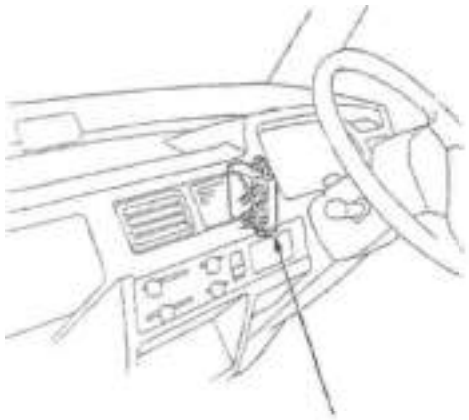
Chapter 6

Fuel System & Emission Control

- Components
- Van & Truck Full System Diagram
- Vacuum Routing Schematic (MT Vehicle)
- Vacuum Routing Schematic (AT Vehicle)
- Emission Control Main Control Box (MT & AT)
- Emission Control Full Schematic (MT)
- Emission Control Full Schematic (AT)
- Emission Control Electrical Schematic (MT)
- Emission Control Electrical Schematic (AT)
- Air Intake & Carburetor
- Carburetor Complete Exploded Parts View Diagram
- Float Bowl Setting (Sea Level~2500 Feet Altitude Setting)
- Fuel Filter & Fuel Pump
- Fuel Pump Replacement
- Gasoline Tank & Removal
- Overheat Indicator (Dash Light)
- Exhaust Overheat Sensor
- Idle Control Unit & Testing

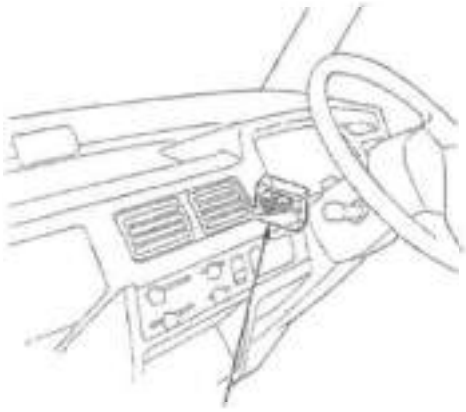


AT Vehicle



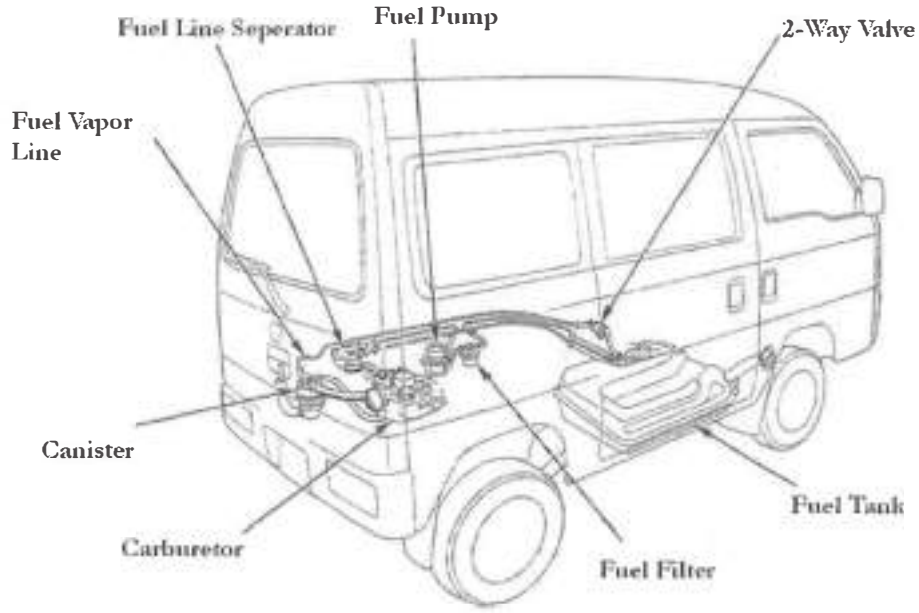
Device Control Unit

AT Vehicle

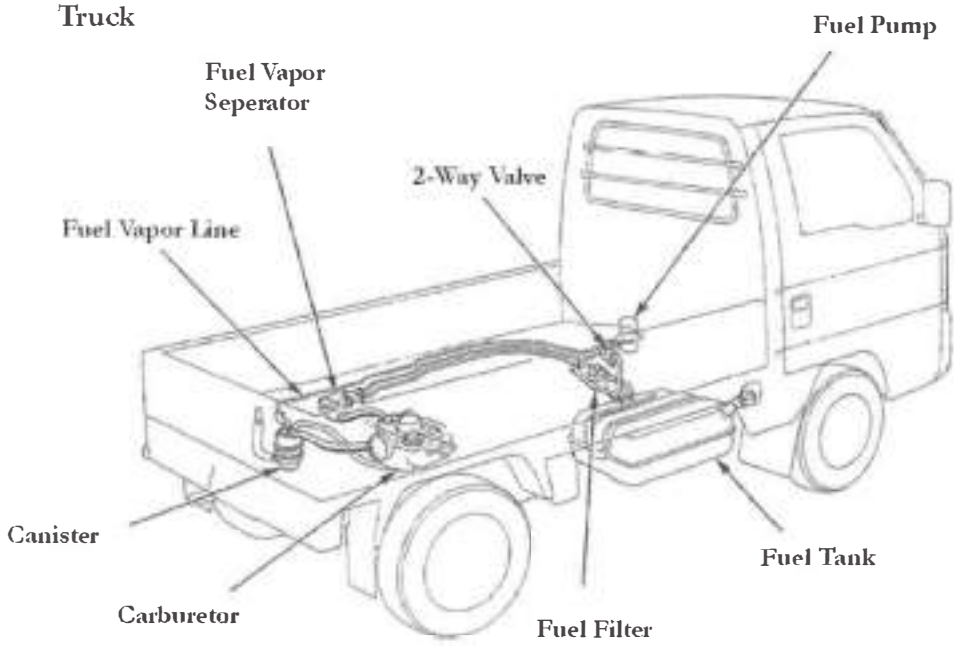


Idle Control Unit

Van

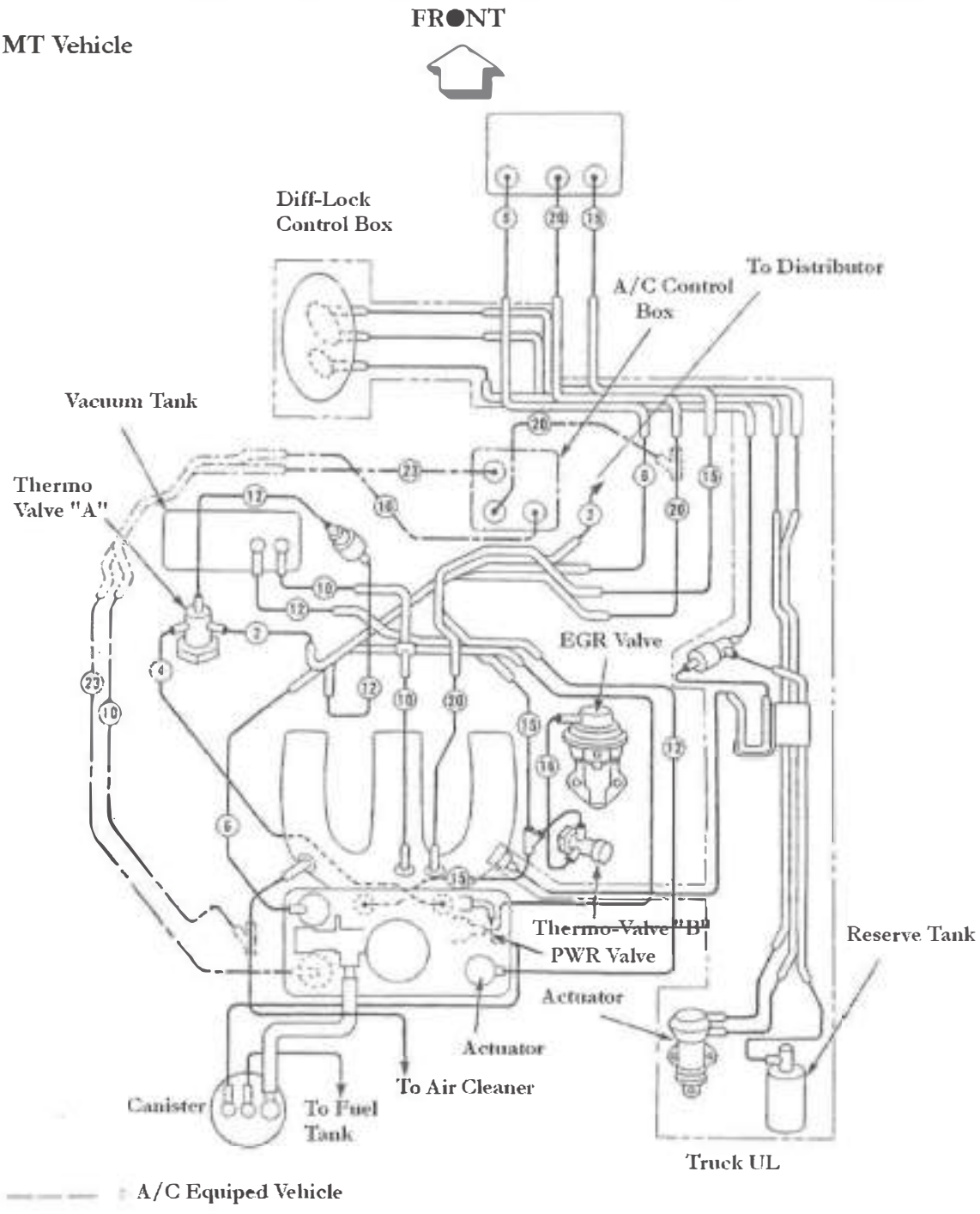


Truck

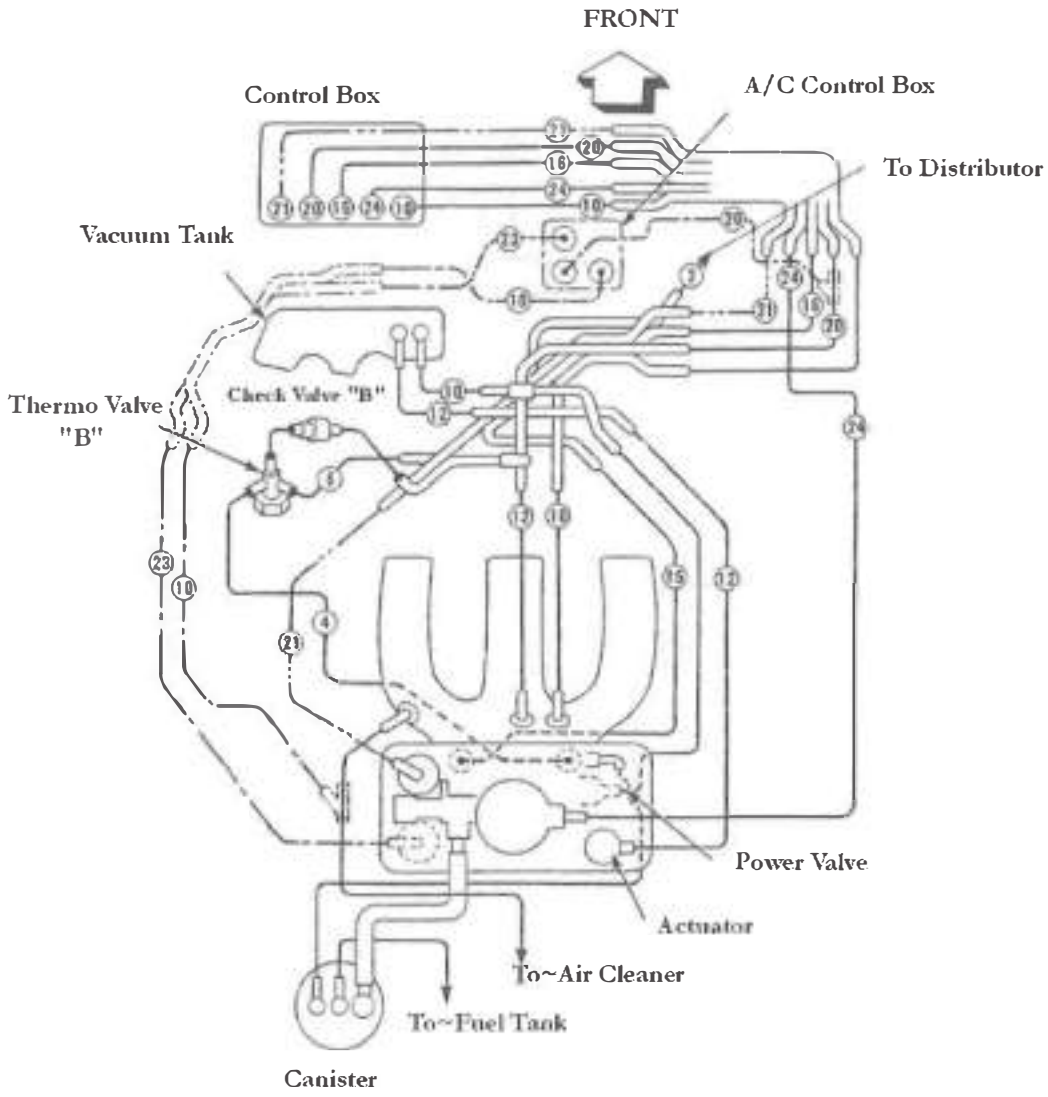


Vacuum Routing

MT Vehicle

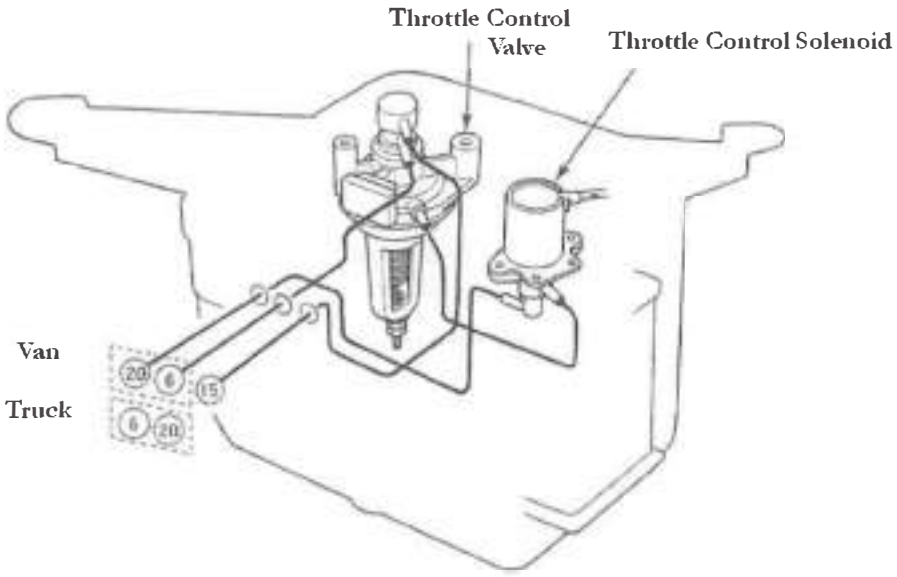


AT Vehicle

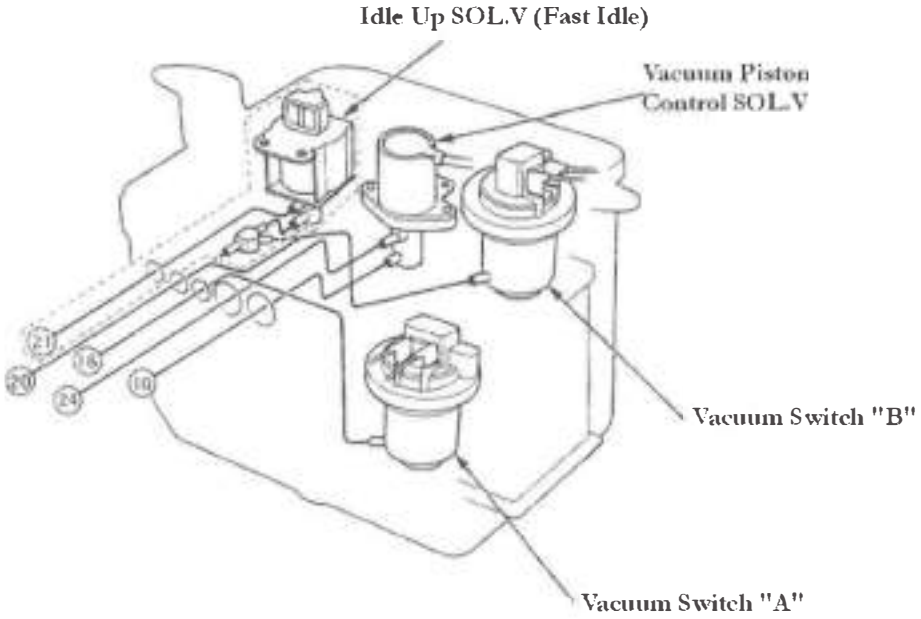


——— : A/C Vehicle

MT Vehicle

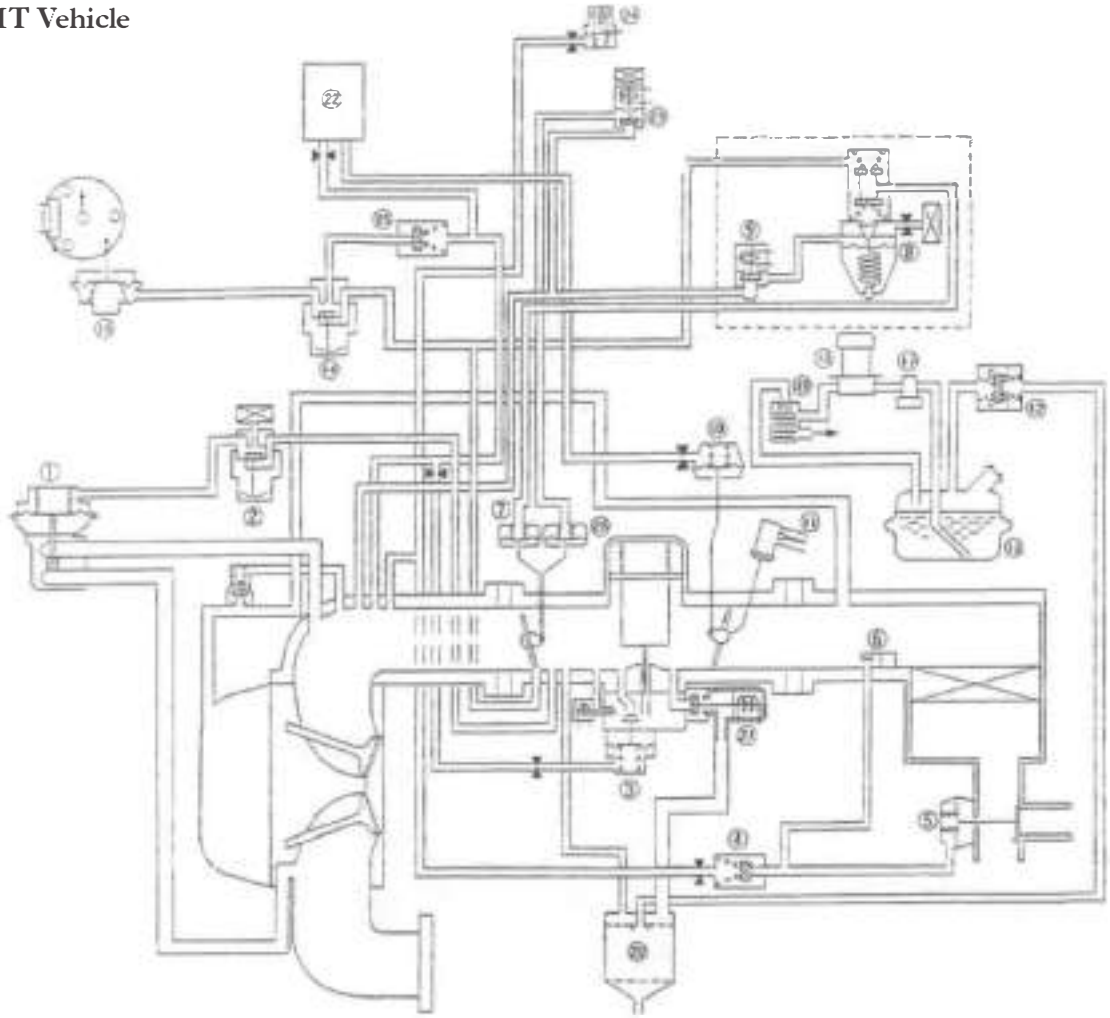


AT Vehicle



Emission Control Full Schematic (MT)

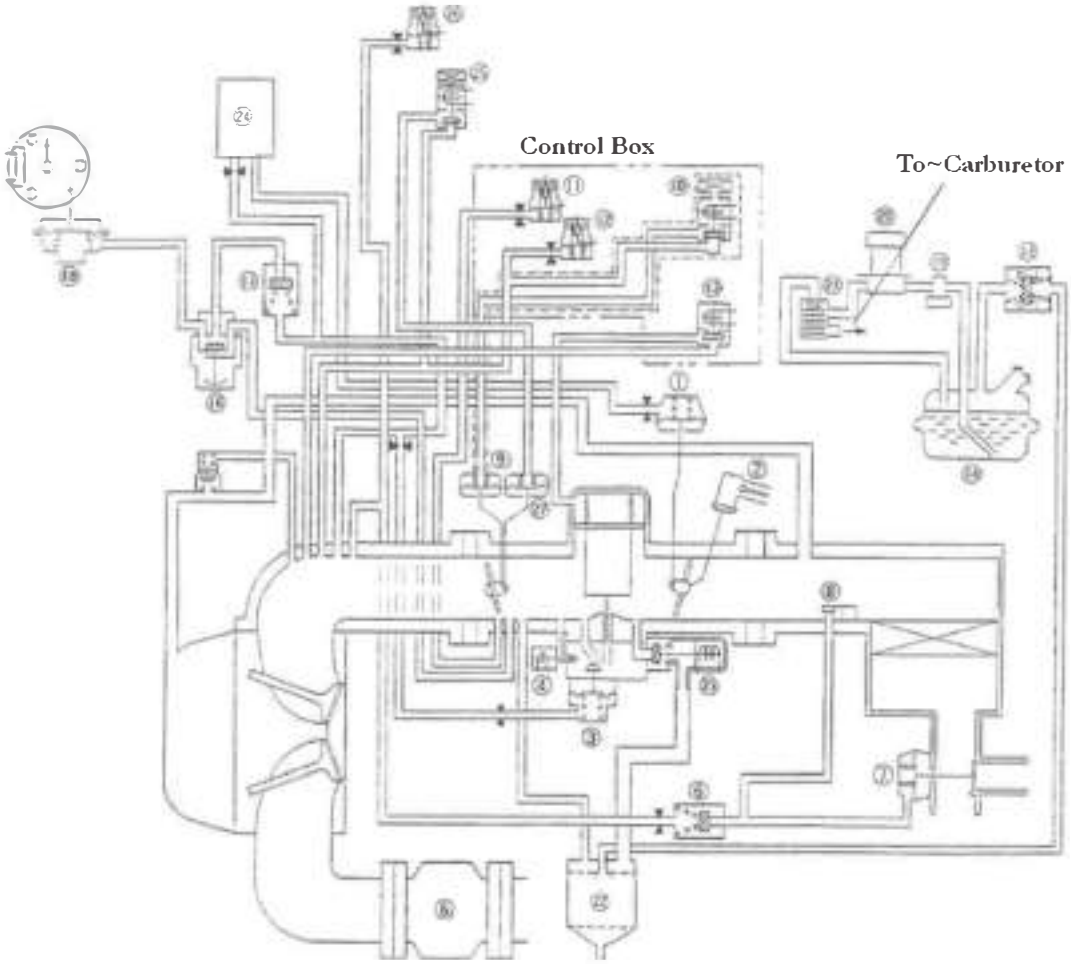
MT Vehicle



1. EGR Valve
2. Thermo-Valve "B"
3. Power Valve
4. Check Valve "A"
5. Air Control Diaphragm
6. Air Bleed Valve
7. Throttle Control Diaphragm
8. Throttle Control Valve
9. Throttle Control SOL.V
10. Actuator
11. Thermo-Wax Valve
12. 2-Way Valve
13. Fuel Tank
14. Thermo-Valve "A"
15. Check Valve "B"
16. Vacuum Advance Diaphragm
17. Fuel Filter
18. Fuel Pump
19. Fuel Vapor Selector
20. Canister
21. Air Vent Cut-Off SOL.V
22. Vacuum Tank
23. A/C Idle Up SOL.V
24. Vacuum Switch (A/C Equiped)
25. A/C Idle Control Diaphragm

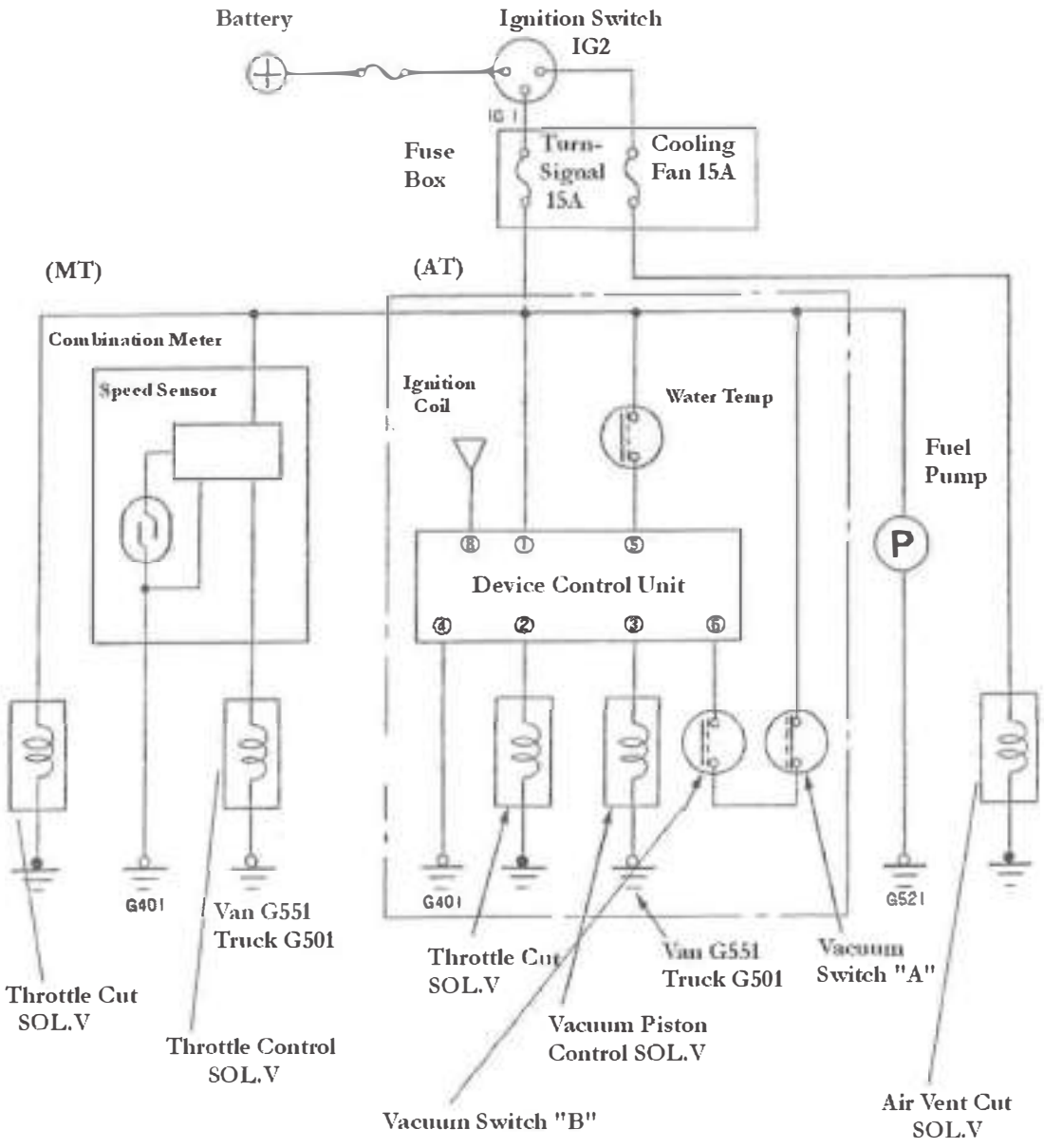
Emission Control Full Schematic (AT)

AT Vehicle



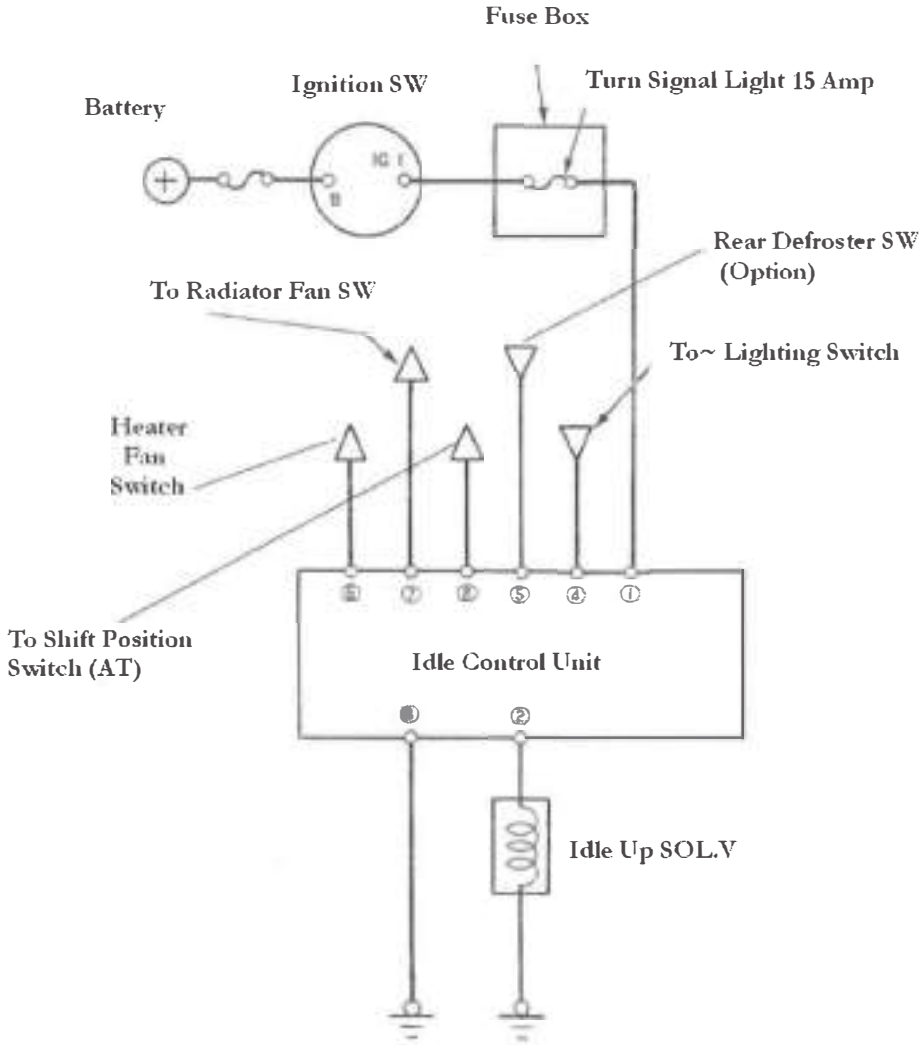
1. Actuator
2. Thermo-Wax Valve
3. Power Valve
4. Throttle Cut SOL.V
5. Convertor
6. Check Valve "A"
7. Air Control Diaphragm
8. Air Bleed Valve
9. Idle Control Diaphragm
10. Idle Up SOL.V
11. Vacuum Switch "A"
12. Vacuum Switch "B"
13. Vacuum Piston Control SOL.V
14. Fuel Tank
15. 2-Way Valve
16. Thermo-Valve "A"
17. Check Valve "B"
18. Vacuum Advance Diaphragm
19. Fuel Filter
20. Fuel Pump
21. Fuel Vapor Selector
22. Canister
23. Air Vent Cut SOL.V
24. Vacuum Tank
25. A/C Idle Up SOL.V
26. Vacuum Switch (A/C Vehicle)
27. A/C Idle Control Diaphragm

Emission Control Electrical Schematic (Carburted Vehicle)



Idle Control Circuit (Carbureted)

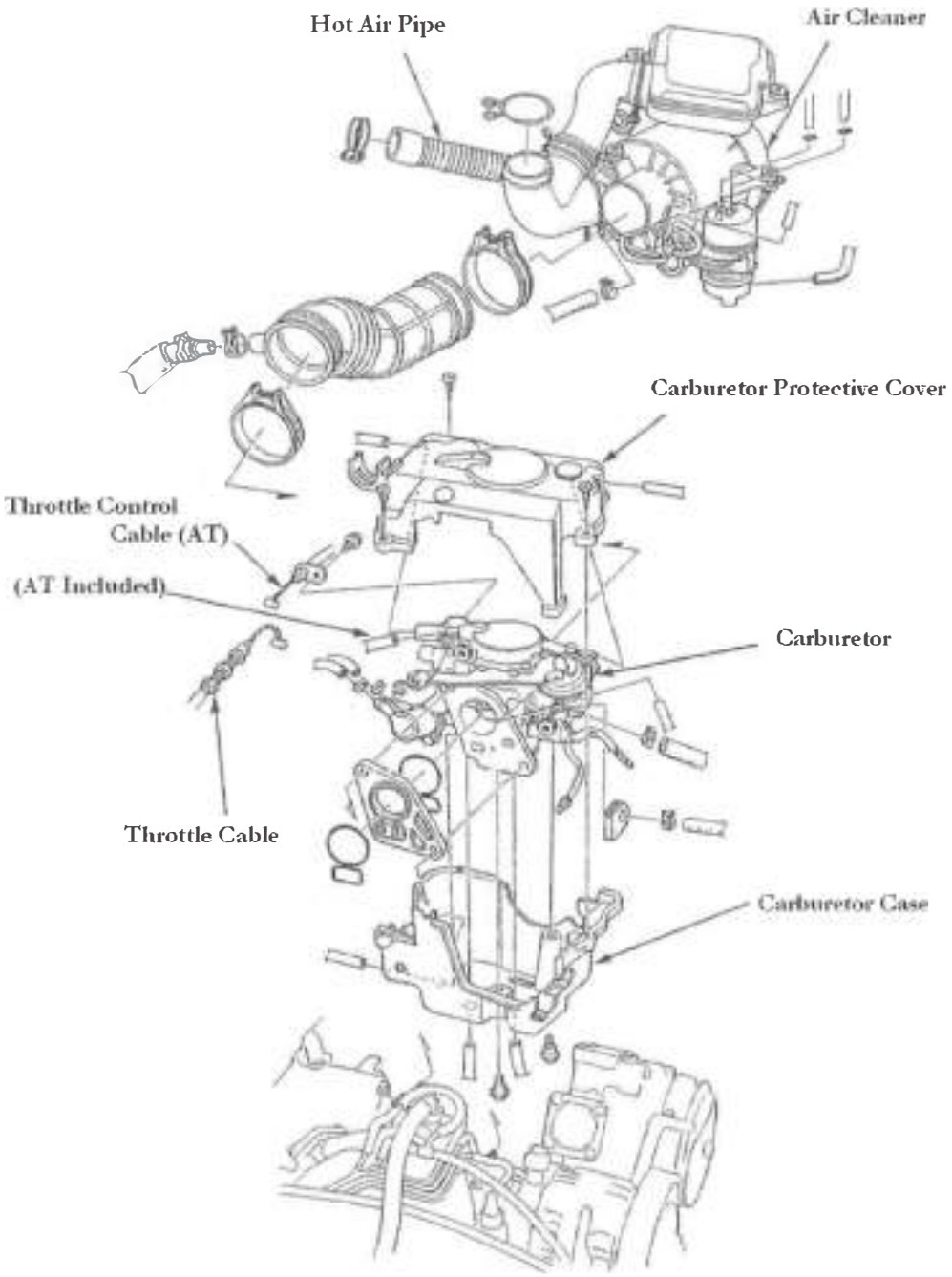
AT Vehicle



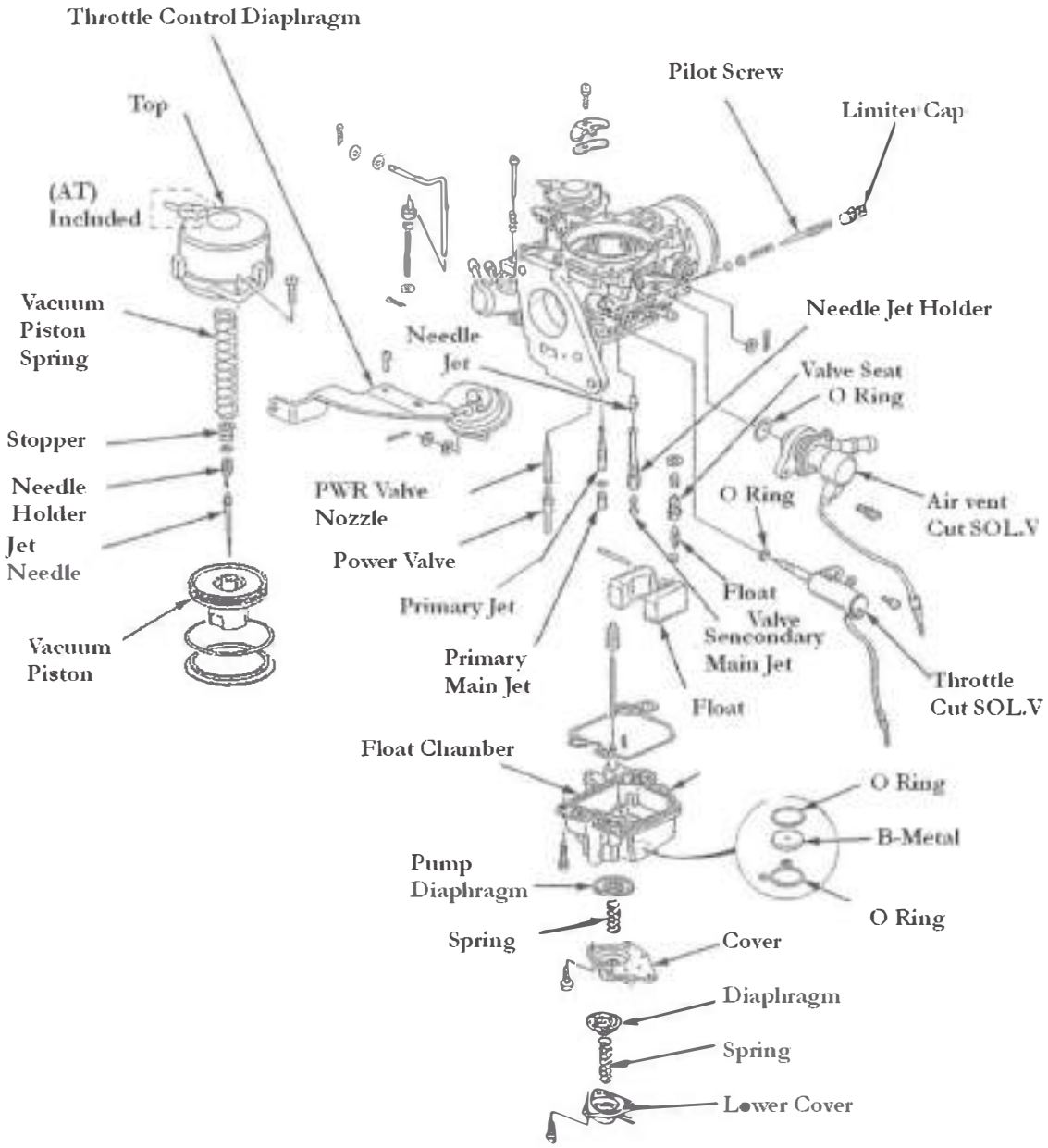
Troubleshooting Tip

Note: Removing Fuse (Turn-Signal Light 15A) for 10 Seconds
Resets Idle Control Unit to Default

Main Components



Carburetor Expolded Parts View



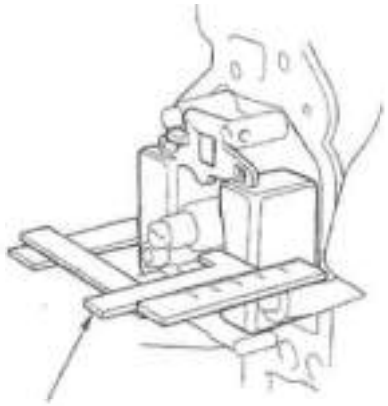
Note: AT Vehicles May Have Some Differences Per Year of Manufacture

Carburetor Float Level

AT & MT Vehicle

Note: Use Float Level Gage to Verify Correct Level

Level: 16+-1mm



Float Level Gage
07401—0010000

Note: Setting For Altitude Below 3000 Feet Above Sea Level

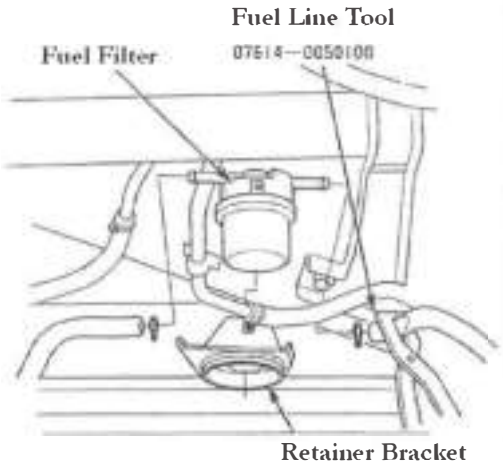
Fuel Filter & Fuel Pump

Fuel Filter

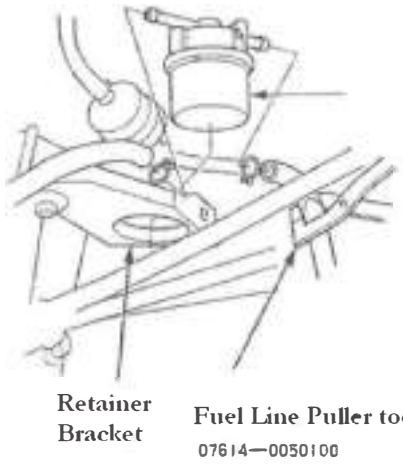
Note: Fuel Filter Must Be Changed Every 40,000 Kilometers

Remove & Replace

Van

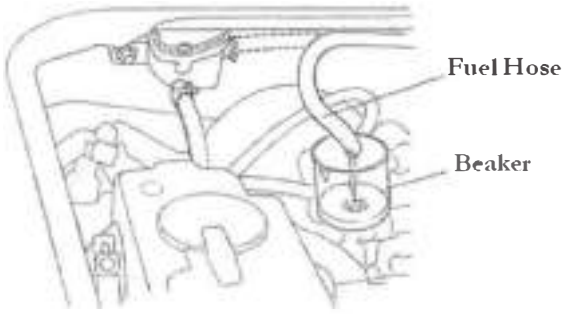


Truck



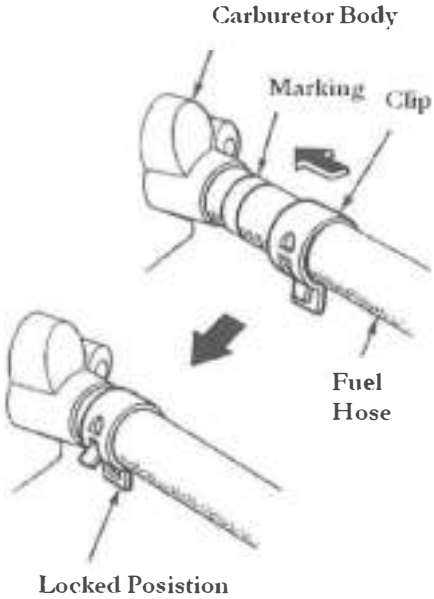
Fuel Pump Test

Note: Change Filter Before Testing Pump



1. Remove Fuel Hose From Carburetor (See Hose Removal Diagram Below)
2. Place End Of Hose Into (1) Liter Beaker
3. Turn Ignition Switch to ON Poaition For (1) Minute and Switch OFF

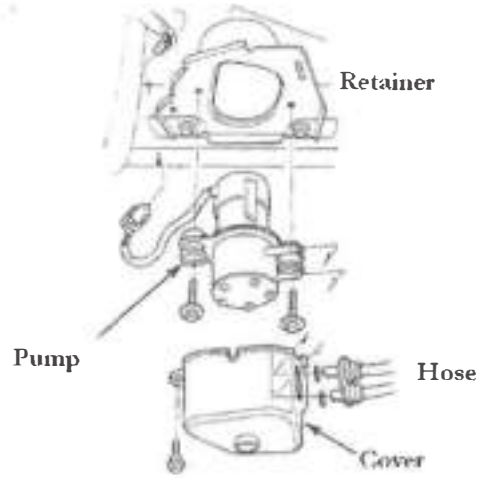
Results: Beaker Must Contain Minimum 400cc of Fuel. Below that Replace Pump and Re-Test



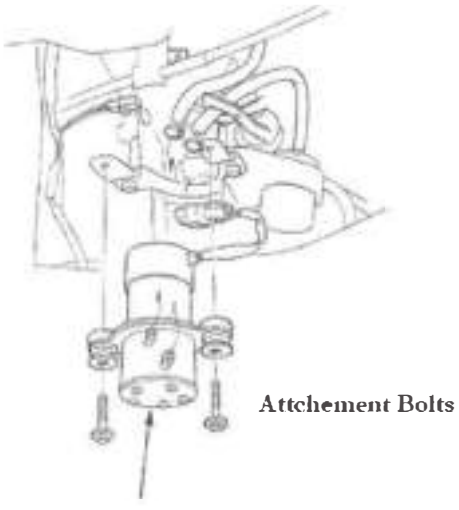
Fuel Pump Replacement

1. Jack Up Vehicle
2. Remove Fuel Pump Cover (Van)
3. Remove Fuel Pump Connector
4. Remove Pump Attachment Bolts
5. Remove Pump
6. Disconnect Fuel Lines
7. Reverse Order Intallation

Van

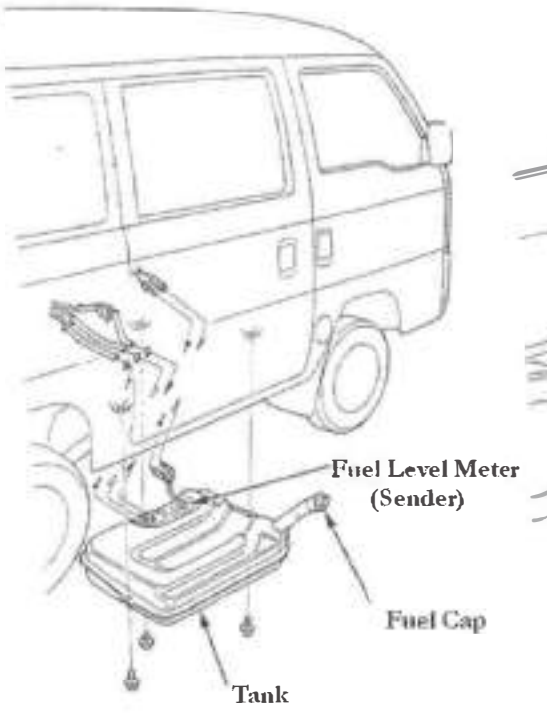


Truck

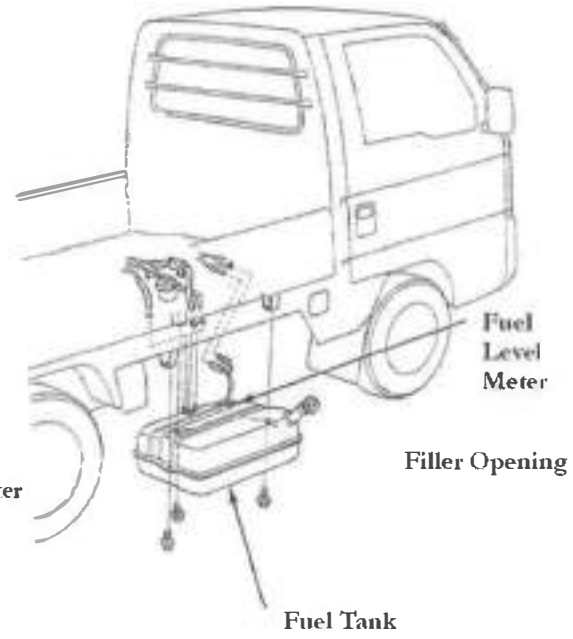


Gasoline Tank Removal

Van



Truck



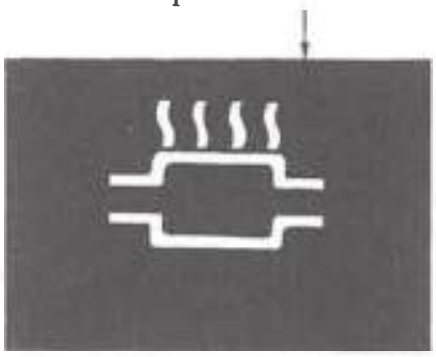
Removeal Procudure

1. Jack Up Vehicle
2. Disconnect Fuel Level Sender Connection
3. Disconnect Fuel Lines
4. Un Bolt Attachment Bolts
5. Lower Tank From Body

Exhaust Overheat Warning System

The Indicator Lamp Indicates The Exhaust Temperature Has Overheated And Engine Must be Shut Down For Repair

Exhaust Temp Overheat Indicator



Note: Continued Driving While Light is ON Can Cause Major Engine Internal Damage

Troubleshoot Fuel System to Determine Cause

Note: Do Not Confuse With O2 Sensor

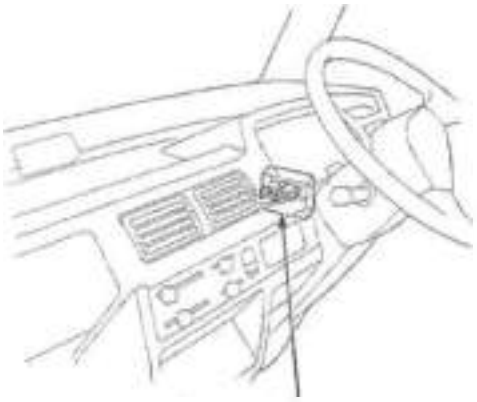
Exhaust Overheat Sensor

Note: Do NOT Cut Wires, Unit Will Be Destroyed

Note: Do NOT Ground Wires

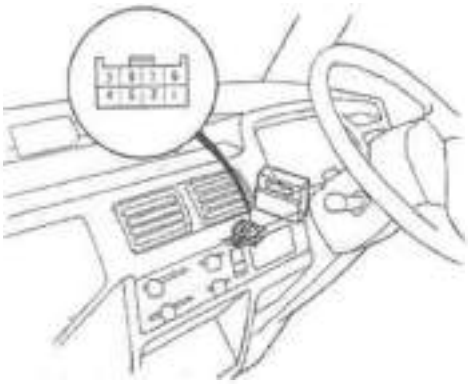
Idle Control Unit (AT)

Location



Idle Control Unit Location
(Carbureted Vehicle)

Idle Control Unit Connector



Note: Improper Gounding Can Cause Failure
Check Pin Number #3 For Ground

Unit Check

1. Ingnition Switch To ON Position
2. Check Pin #1 for Power and #3 For Ground

Note: To Re-Set Unit Remove "Turn Signal Light (15A) Fuse" for 10 seconds

Unit Failure
Note: Failed Units Can Not Be Repaired and Must Be Replaced

Heater Fan Switch

1. Start Engine
2. Check Pin #6 (+) and Pin #3(-)

Failure: Replace Idle Control Unit

Radiator Fan

1. Start Engine and Warm
2. Check Pin #7(+) and Pin#3(-)

Fan Does Not Engage Replace Unit

Rear Defroster Equiped Vehicle

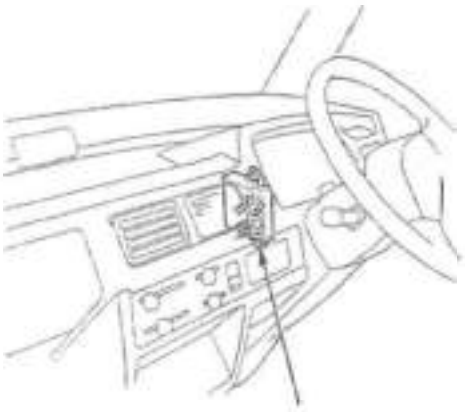
1. Start Engine and Warm
2. Test Defroster Switch
3. Test Pin #5(+)

Lighting Switch & Idle Control Unit

1. Ignition Switch to ON
2. Check Pin #4(+) and Pin#3(-)

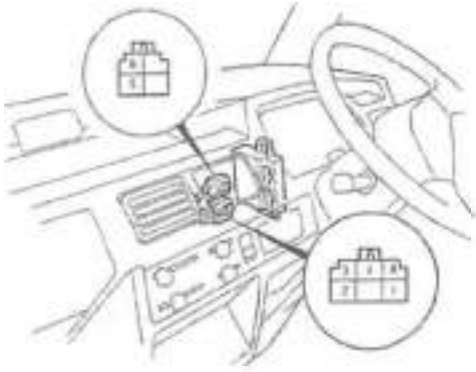
Device Control Unit (AT Vehicle)

Device Control Unit Location



Device Control Unit

Connectors



Connections & Pins

Device Control Ground 6P #4(-)

Ignition Switch (IG1)
1. Ignition Switch ON
2. 6P #1 (+) #4 (-)

Ignition Coil & Device Control Unit
1. Ingnition Switch ON
2. 6P #8 (+) #4 (-)

Water Temp Switch
1. Engine ON
2. 4P #5 (+) & 6P #4(-)

Reset Unit: Remove Turn Signal Lamp
15A Fuse 10 Seconds

Chapter 7

Clutch

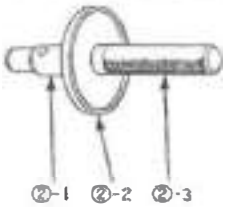
- Specialty Tools
- Clutch System Diagram
- Clutch Pedal & Cable Adjustment
- Release Bearing Inspection & Replacement
- Pressure Plate
- Clutch Disk & Inspection
- Flywheel
- Clutch Assembly

Clutch

Specialty Tools

No.	Part #	Description
①	07924-PD20003	Flywheel Ring Gear Holder
②-1	07LAF-PZ10110	Clutch Attachment Shaft
②-2	07JAF-PM7011A	Clutch Attachment Disk
②-3	07936—3710100	Ream Bar Handle
③	07746—0010100	Outer 32x35mm
④	07749—0010000	Handle "A"

①

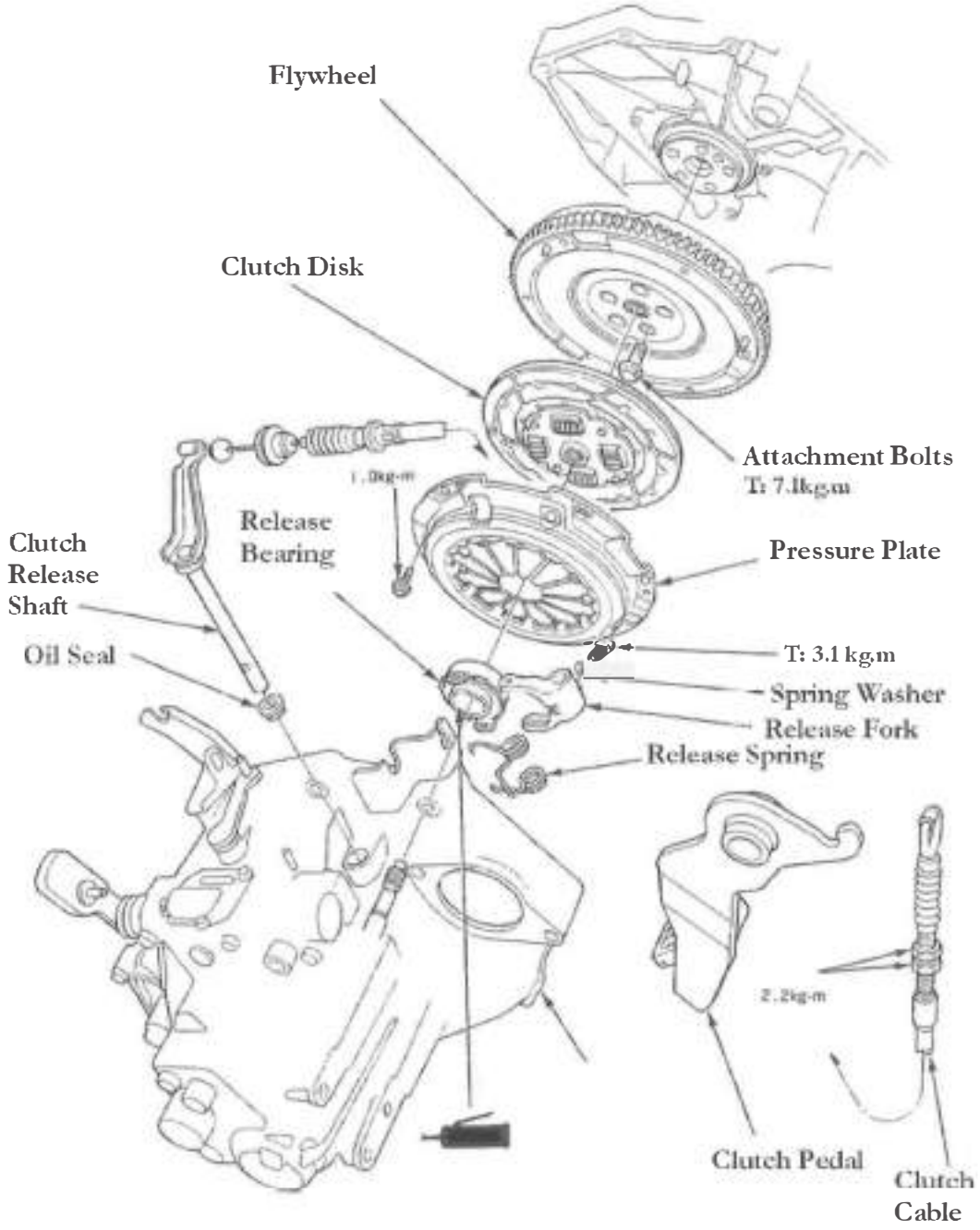


④

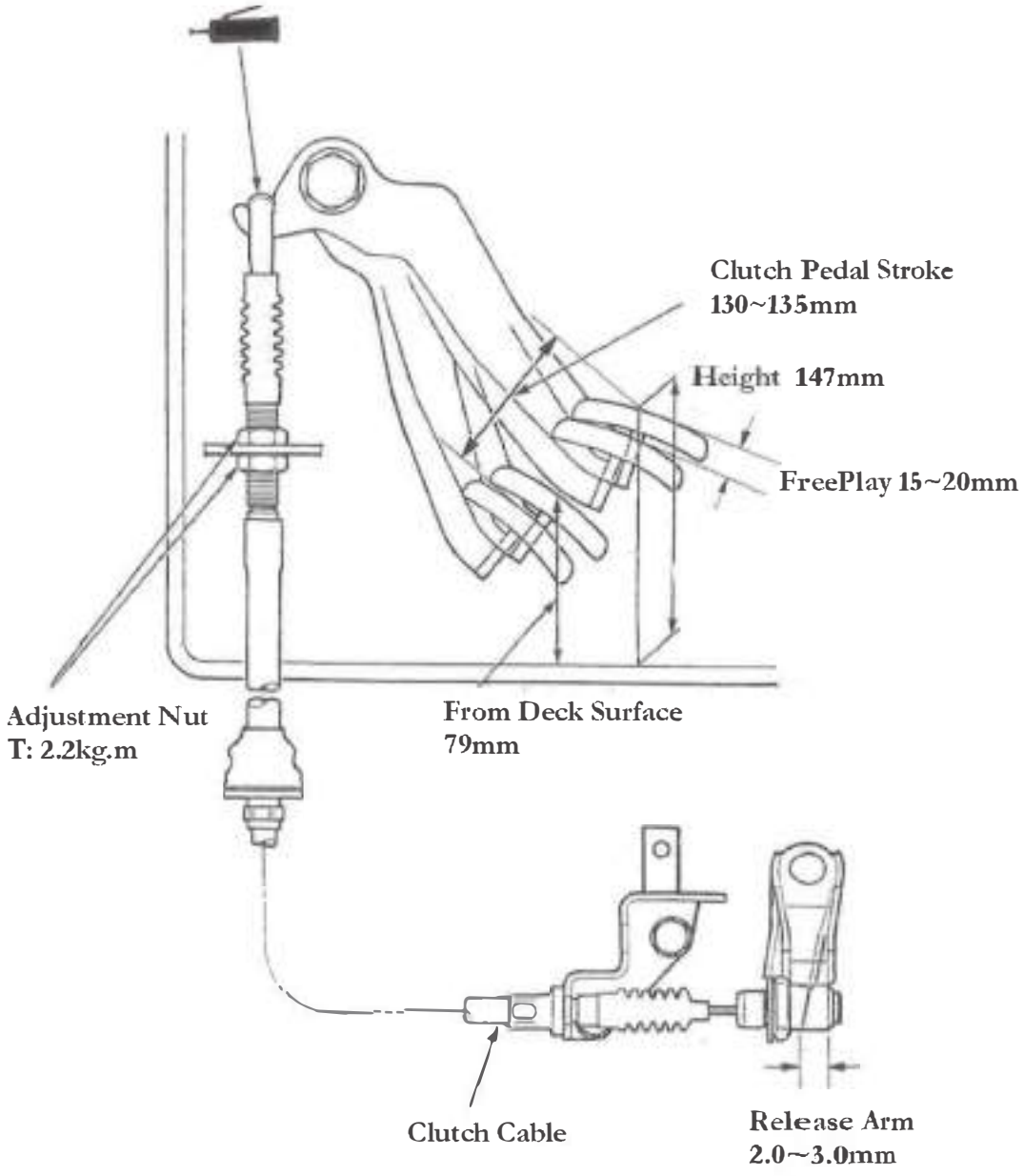
③

Clutch

Complete Diagram



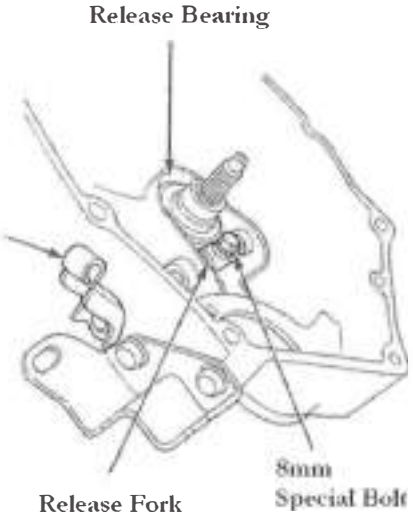
Clutch Pedal and Cable Adjustment



Clutch

Release Bearing

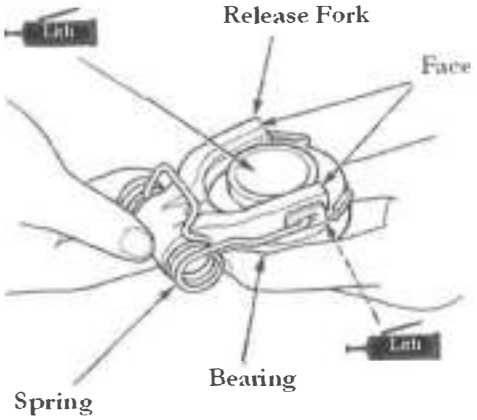
1. Remove 8mm Special Bolt



2. Remove Clutch Release Shaft, Release Bearing, and Release Fork
3. Seperate Spring From Release Bearing

Grease Point

Note: Use High-Temp Molybdenum or Lithium



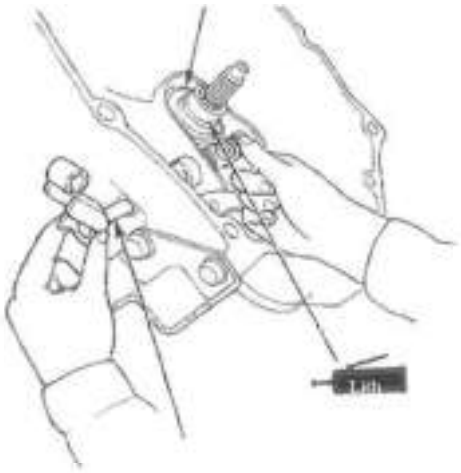
Bearing Check

Note: Do NOT Soak in Cleaning Solvent Unit Will Fail

1. Turn Left~Right & Check For Free Travel Restrictions Replace Bearing

Note: Replace Bearing 100,000 Kilometer

Release Bearing



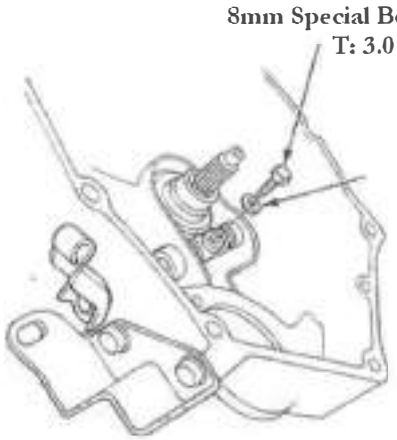
Release Shaft

Note: Check Free Travel After Applying Grease

Pressure Plate

Bearing Assembly

Assemble: Set Torque and Check Free Travel

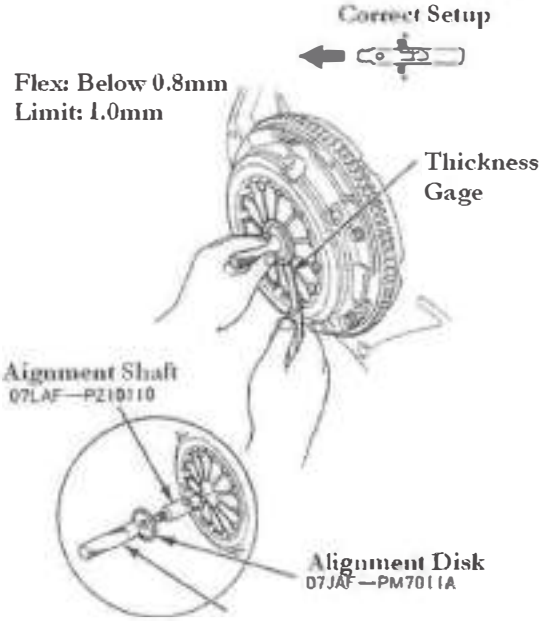


Note: Cover Area With Plactic Dust Cover if Not Immediate Installation

Note: If Unit to be Stored More Than On-Week Relplace Grease Before Installation

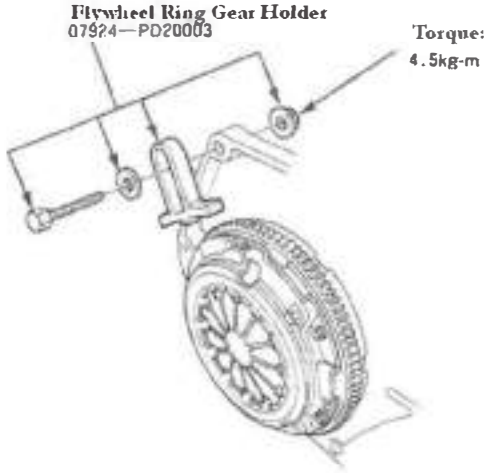
Pressure Plate Inspection

1. Use Specialty Tools and Check Following



Ream Bar Handle
07936—3710100

2. Attach Flywheel Gear Holder

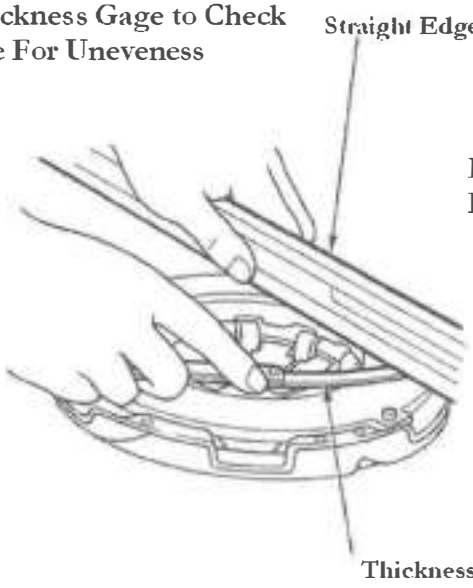


Replace Pressure Plate 100,000 Kilometers

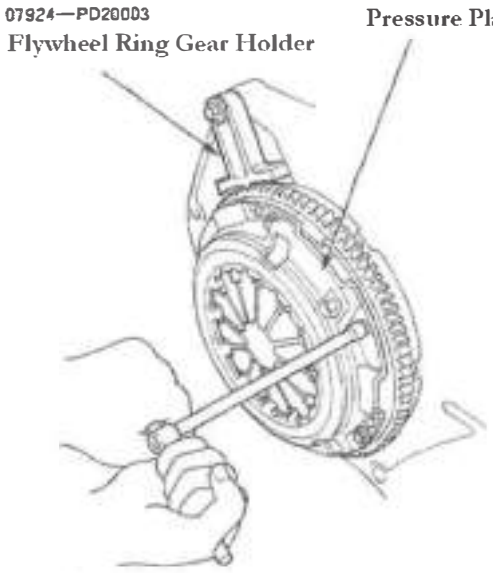
Pressure Plate

Disk Face Measurment

Note: Use a Thickness Gage to Check Disk Face For Uneveness



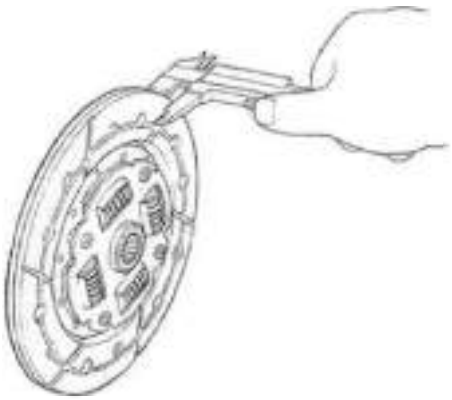
Range: Below 0.03mm
Fail: 0.15mm



Clutch Disk Inspection

Note: Clutch Disk Must be Changed 100,000 Kilometers

1. Visual Inspection: Burnt Face or Visual Damage Discard



2. Measure Thickness

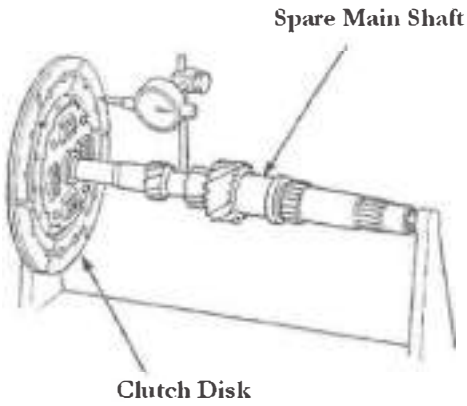
Range: 8.35~9.15mm
Fail: 5.75mm

Lining to Rivet Measurment

Range: Above 1.3mm
Fail: 0.2mm

Disk Round-Out

1. Place Unit on Stand
2. Use Spare Mainshaft and Dial Gage
3. Check Roundout Measurement



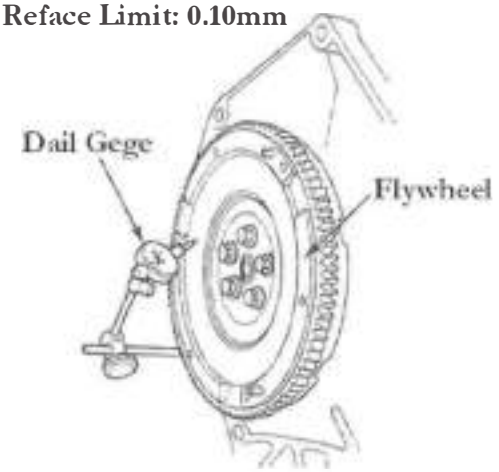
Range: Below 0.6mm
Fail: 1.0mm

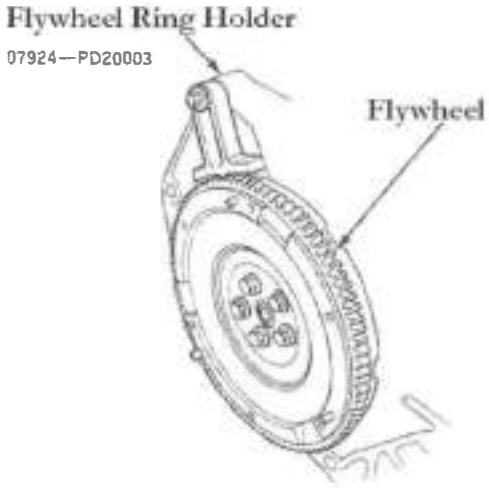
Flywheel

1. Inspect Fywheel Ring Gear Teeth
   Broken or Missing Teeth Replace Unit

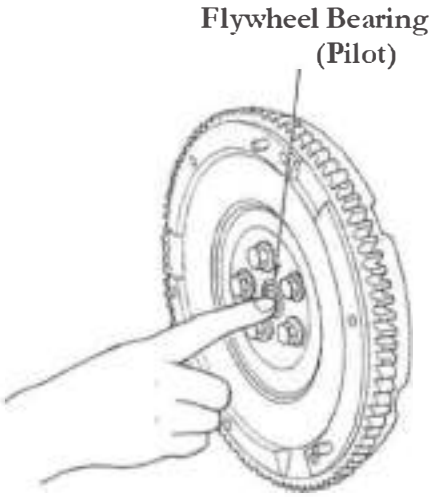
2. Use a Dial Gage and Check Round-Out
   Measurement as in Diagram Below

   Range: Below 0.05mm
   Fail: 0.15mm
   Reface Limit: 0.10mm





Inspect Flywheel Bearing



Note: If Nicked or Rough Edges Replace

See Next Page For Replacement

Clutch

Assembly

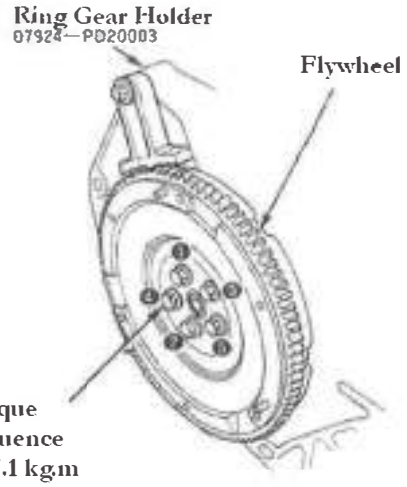
Flywheel Bearing Replacement

1. Remove Flywheel
2. From Transmission Side Collapse Bearing

3. Flip Over Flywheel and Knock Out Bearing
4. Replace Bearing

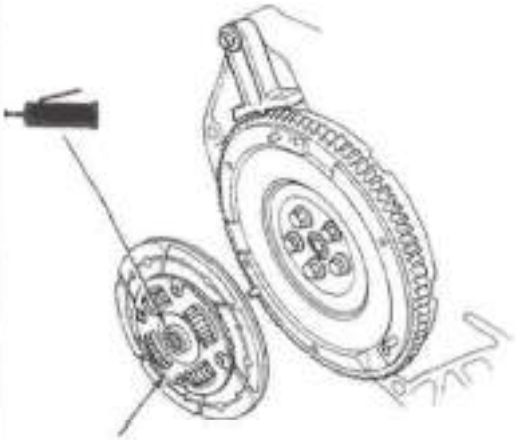
Clutch Assembly

1. Attach Flywheel to Engine
2. Attach Flywheel Ring Gear Holder
3. Follow Torque Sequence Below and Set Bolts to T: 7.1kg.m



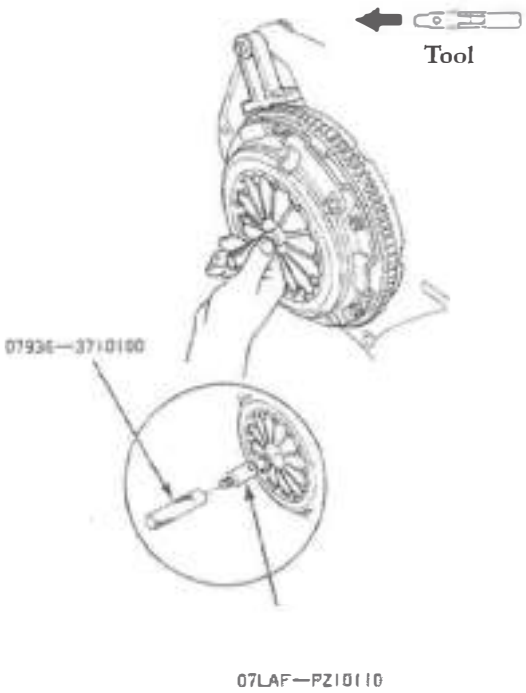
4. Place Clutch Disk in Place
5. Grease Center Gear

Note: Do NOT Get Grease on Disk



6. Attach Clutch Disk and Pressure Plate to Flywheel

7. Use Alignment Tools to Align Parts Before Seting Torque



Tool Diagram Close-up

8. Torque to Specifications

Torque: 1.0 kg.m

9. Remove Aignment Tools. Remove ring Gear Holder Tool.

Note: Place Plactic Bage Over Unit Unit Assembly

Chapter 8

Driveshaft & Axel

- Specialty Tools
- Rear Driveshaft (Axel) Removal
- Rear Driveshaft (Axel) Rebuild (CV Joints)
- Components & Inspection
- Rear Driveshaft (Axel) Assembly
- Front Driveshaft (Axel) 4WD Vehicle
- Front Driveshaft (Axel) Removal
- Front Driveshaft Rebuild
- Propeller Shaft (Driveshaft)

Note: Honda uses the term "Driveshaft" for Axels and Propeller shaft for "Driveshaft".

Specialty Tools

Flare Nut Wrench
07921-00101000

①

Hub Pluller
07935-6790000

②

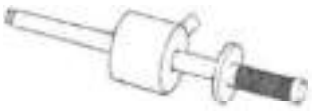
Hub Puller
Attachment
07936-5670100

③

Attachment
07JAC-SJ60200
(M10x1.25mm)

④

Slide-Hammer
07936-5790001



⑤

Slide-Hammer
Attachment
07936-SC20001

⑤

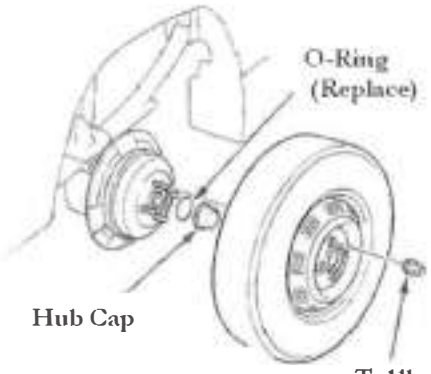
Box Wrench
(10mm)

⑦

Rear Driveshaft

Removal

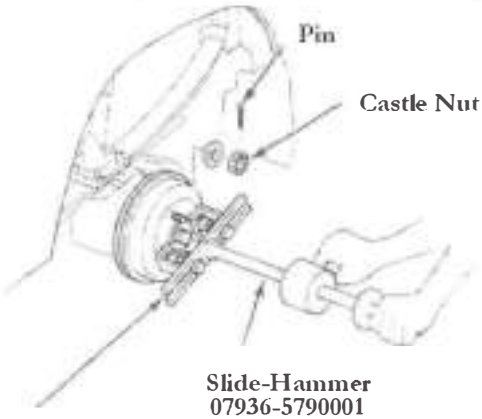
1. Jack Vehicle and Remove Tire
2. Drain Transission Oil
3. Remove Brake Drum Hub Cap



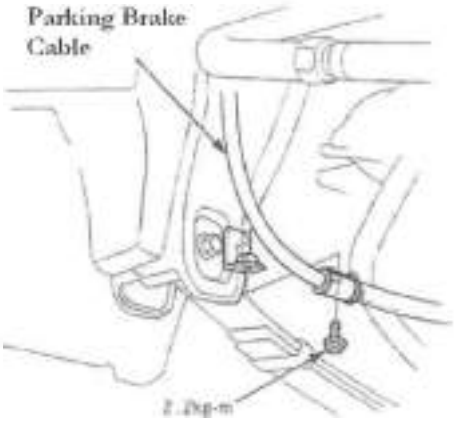
T: 11kg.m

4. Remove Castle Nut Pin (Replace)
5. Remove Castle Nut
6. Attach Tools Listed Below and Remove Drum

Note: Make Sure Parking Brake is NOT Engaged

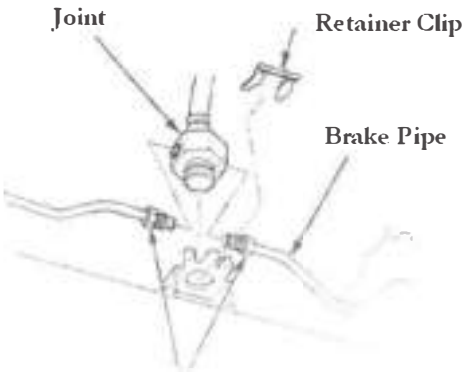


Slide Hammer Head
07936-SC20001



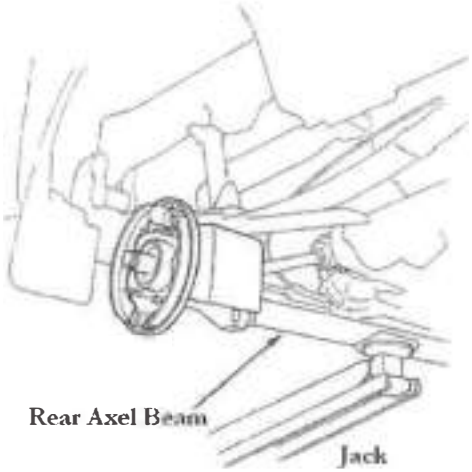
7. Remove Retaining Bolt from Rear Spring Bracket and Slide Away Parking Brake Cable

8. Disconnect Brake Pipe Joint as in Diagram Below. Cove Ends Will Plastic Cover

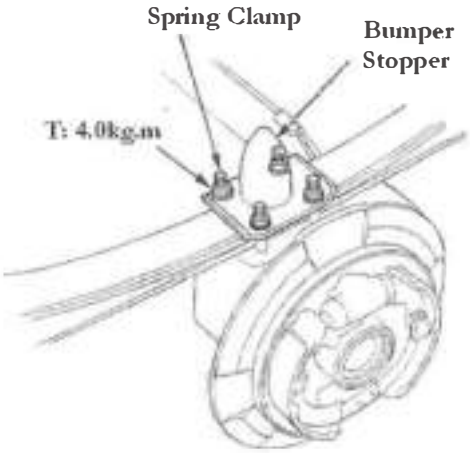


T: 1.9kg.m

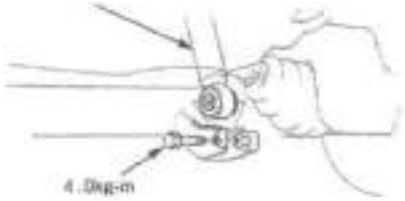
9. Place a Floor Jack Under Rear Axel Beam as in Diagram Below



10. Remove Spring Clamp and Bumper Stopper as Shown Below

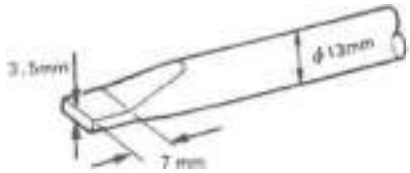


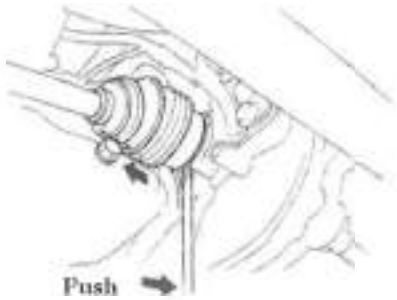
Rear Shock



11. Remove Rear Shock

Note: Create a Tool to Below Measurements

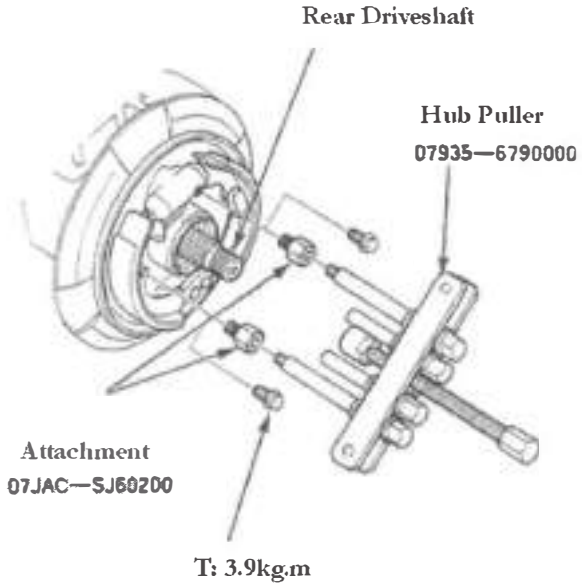




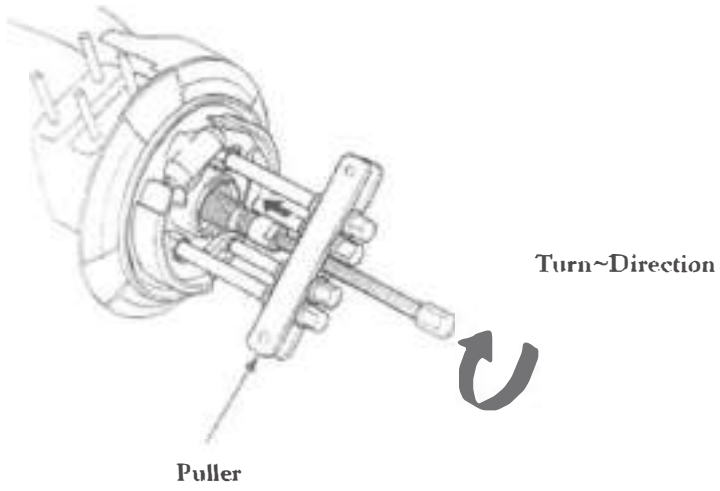
12. Using the Driver Tool Above Pry Back Inboard Joint. If Unit Fails to Pull Back Use Puller Setup on Next Page

Caution: Do Not Damage Unit

Rear Driveshaft

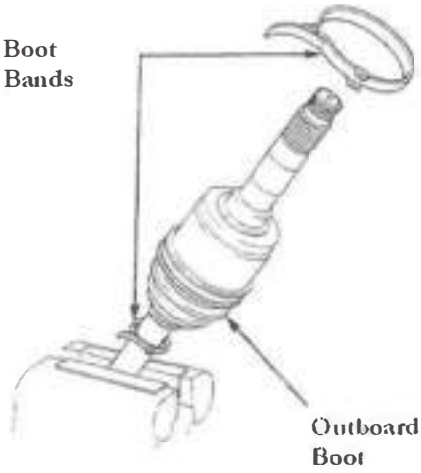


12. Use Appropriate Hub Puller & Attachments, Remove Driveshaft

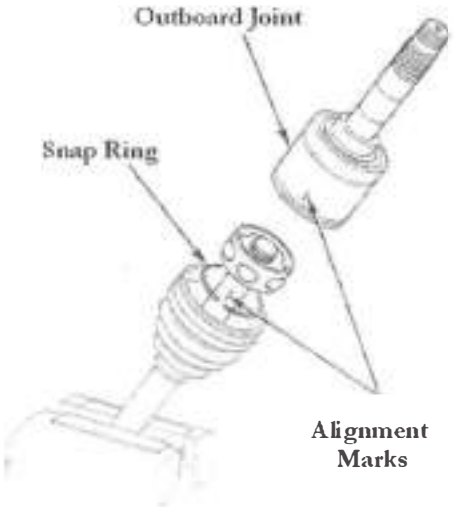


Rear Driveshaft Rebuild

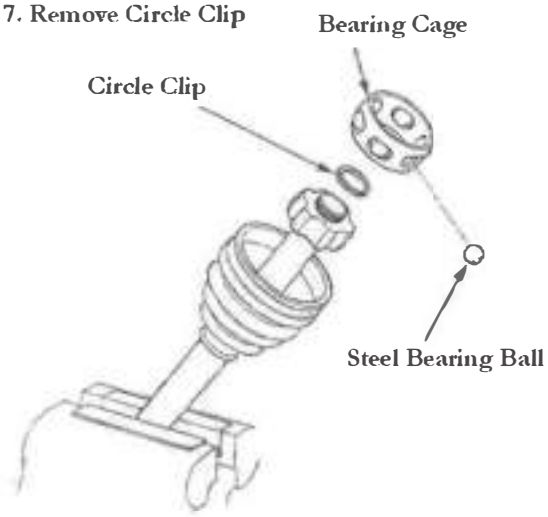
1. Wrap Shaft and Place in Vice
2. Remove Bot Band Retainer Straps



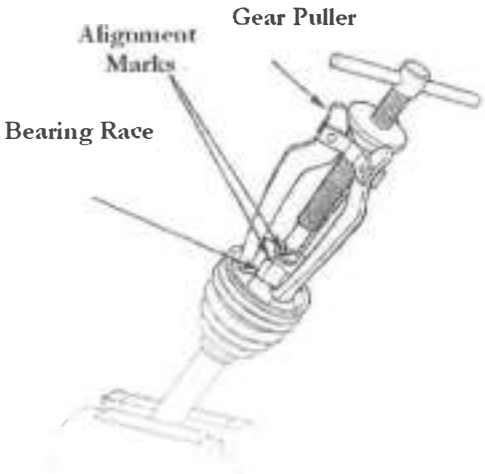
3. Line Up Marks and Remove Snap Ring
4. Remove Outbard Joint

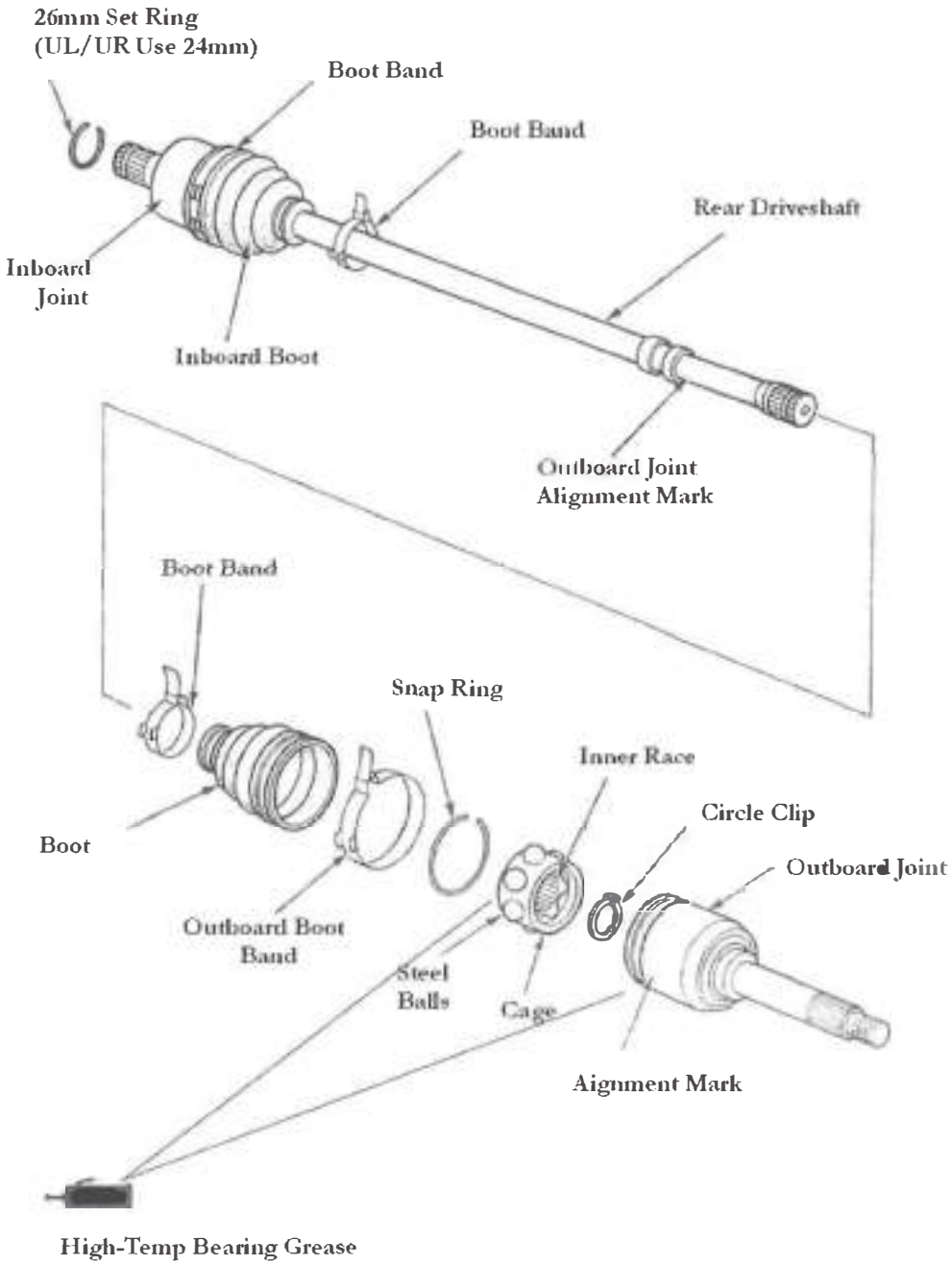


5. Be Careful Not to Loose Steel Balls
6. Slide Off Bearing Cage
7. Remove Circle Clip



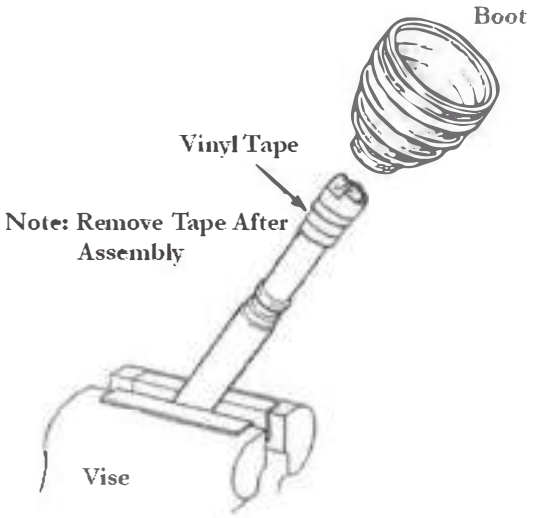
8. Line Up Alignment Marks as in Picture Below and Use Puller Remove Bearing Race



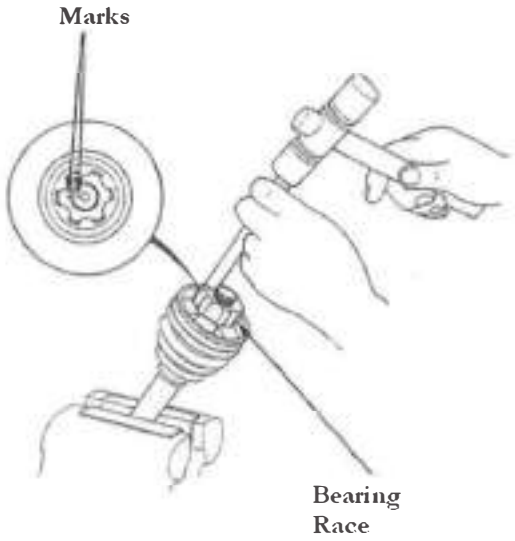

26mm Set Ring
(UL/UR Use 24mm)
Boot Band
Boot Band
Rear Driveshaft
Inboard
Joint
Inboard Boot
Outboard Joint
Alignment Mark
Boot Band
Snap Ring
Inner Race
Circle Clip
Outboard Joint
Boot
Outboard Boot
Band
Steel
Balls
Cage
Aignment Mark
High-Temp Bearing Grease

Assembly

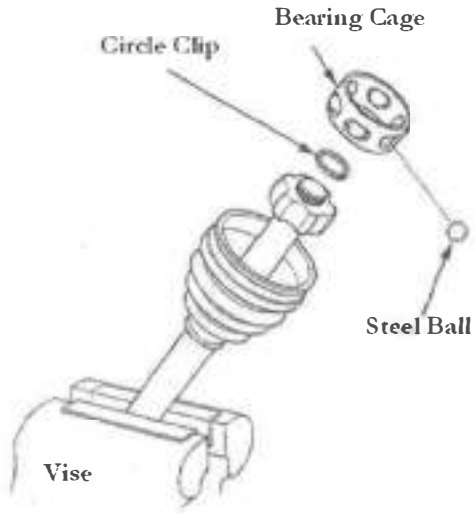
1. Place Vinyl Tape Over Shaft End. Put Grease on Tape and Slide on Boot. Remove Tape After Putting on Boot.



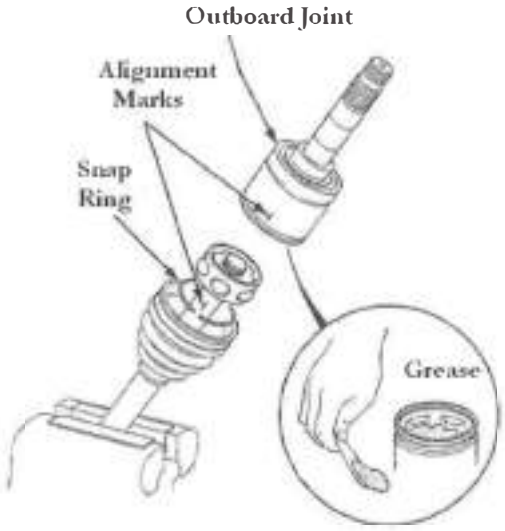
2. Line Up Bearing Race With Alignment Mark and Tap onto Shaft
Note: Use a Brass Drift



3. Attach Circle Clip



4. Slide Over Bearing Cage and Insert Steel Ball Bearings
5. Grease Outboard Joint
Grease Amount: 100~120Grams
6. Align Marks and Assemble Unit
7. Grease as in Diagram



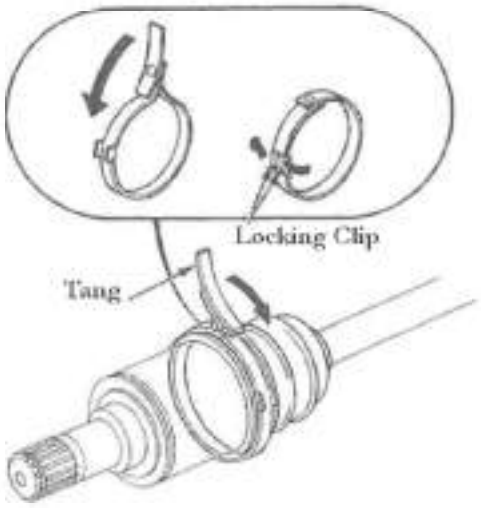
Grease Amount: 50~70 Grams

8. Add Grease To Boot as in Diagram Below

Grease

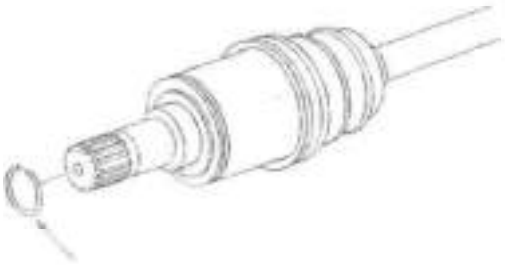
Right: 438-443mm
Left: 550-555mm
(UL/UR 477-482mm)

9. Attach Locking Bands as in Diagram Below



10. Attach Center Ring

Note: Unit to be Stored Place in Plastic Cover



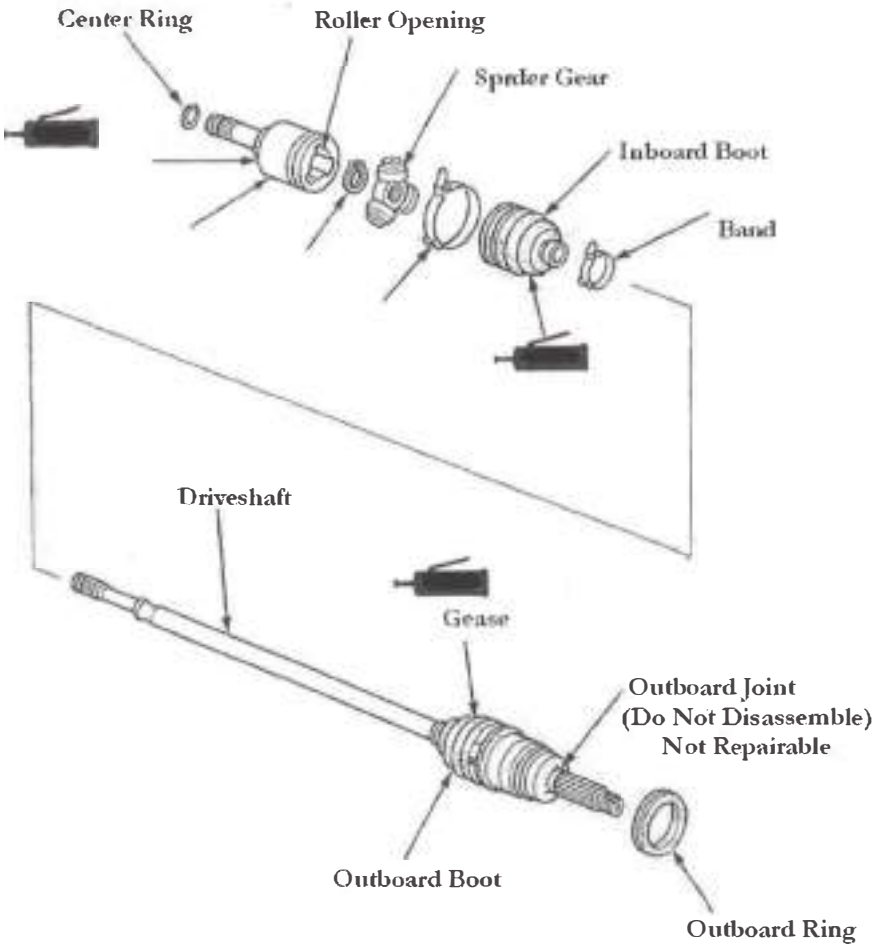
26mm Center Ring

UL/UR Vehicles 24mm

Front Driveshaft (4WD)

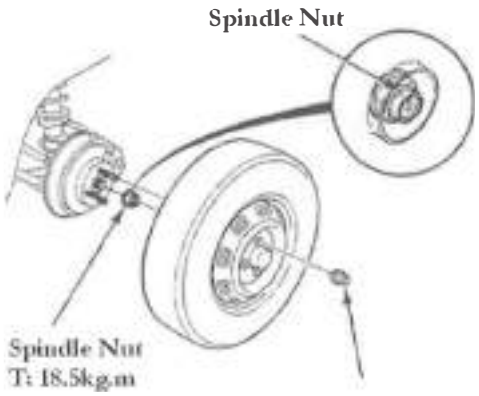
Exploded View

Grease Amount:
Inboard Joint: 80~100g
Outboard Joint 40~60g



Front Driveshaft Removal (4WD)

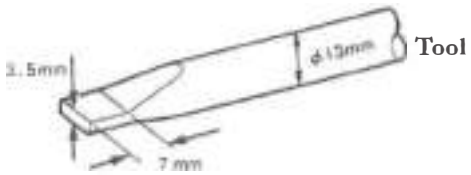
1. Jack Vehicle and Remove Front Wheel
2. Remove Spindle Nut (32mm Socket)
3. Drain Front Differential Oil

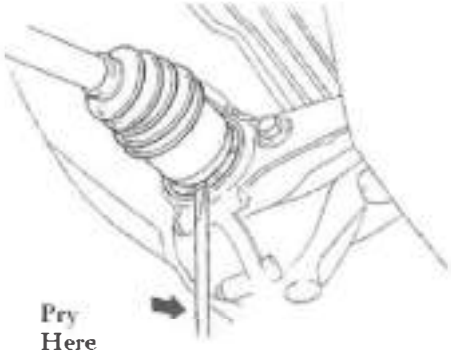


4. Seperate Lower Bolt Joint

5. Seperate Knuck and Move to Side

6. Make Tool as in Diagram Below



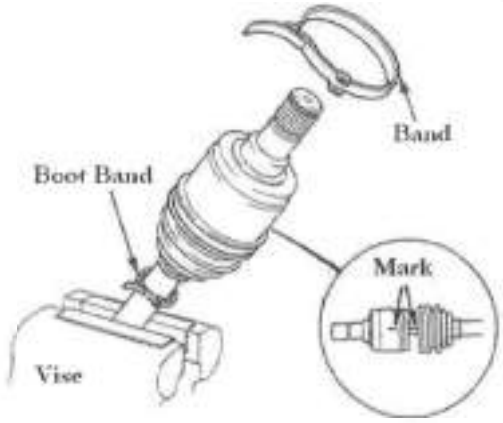


7. Remove Shaft and Rebuild

Front Driveshaft Re-Pack

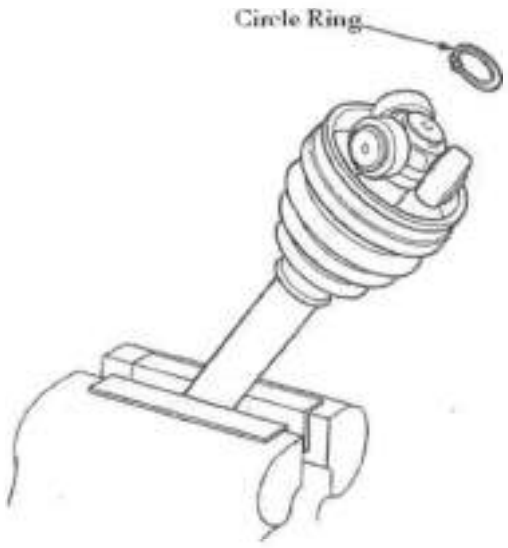
Disassembly

1. Remove Boot Retainer Bands
2. Line up Alignment Marks and Slide Off Inboard Joint

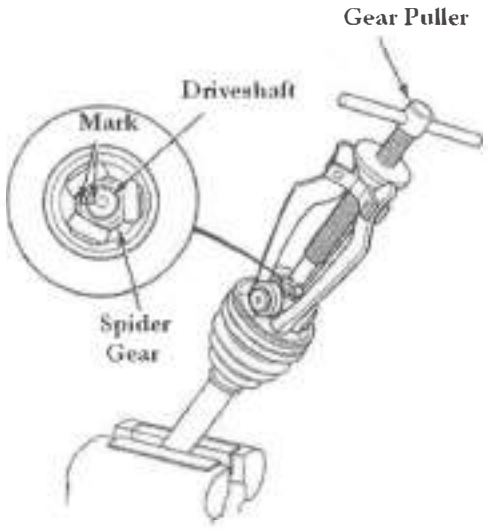


Note: Place Either Wood or Cloth On Shaft Before Placing in Vise

3. Remove Circle Ring



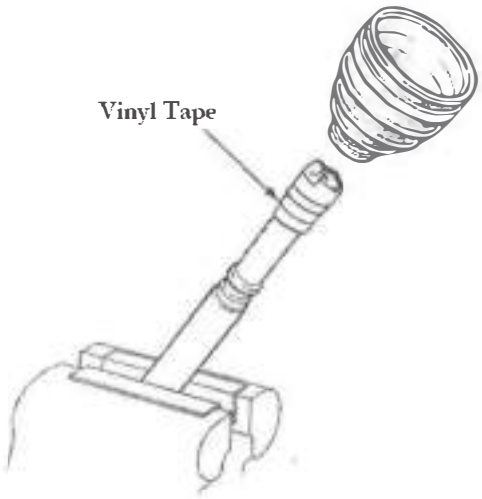
4. Use a Gear Puller and Remove Spider Gear



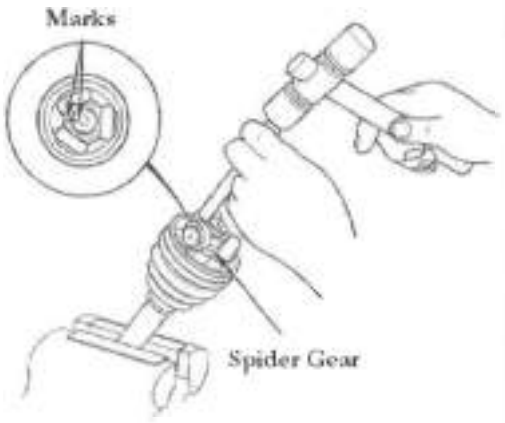
5. Place Vinyl Tape OVer End of Shaft, Cover in Grease and Slide Boot Off

Front Driveshaft Re-Pack

1. Coat Vinyl Tape With Grease and Slide on New Boot. Remove Vinyl Tape After Boot is On.



2. Align Marks and Tap On Spider Gear



Note: Use Brass Drift To Tap on Gear

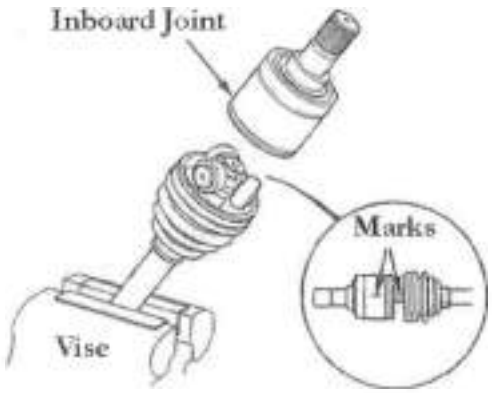
3. Attach Circle Clip

4. Pack Outboard Boot With Grease

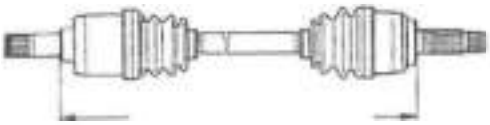
Grease Amount: 40~60grams

5. Before Assembling Inboard Joint Pack With Grease
   Grease Amount: 80~100g

6. Align Marks and Connect

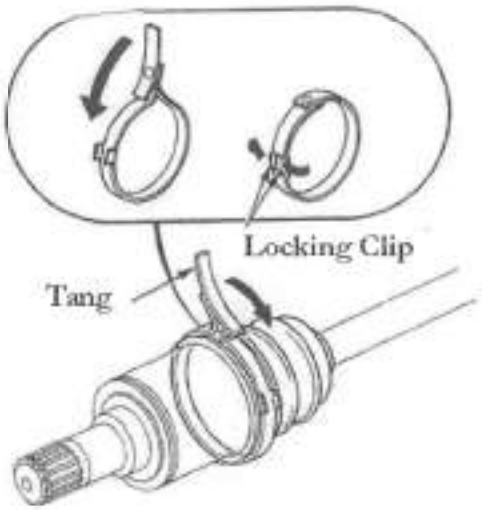


7. After Assembling Unit Check Measurement

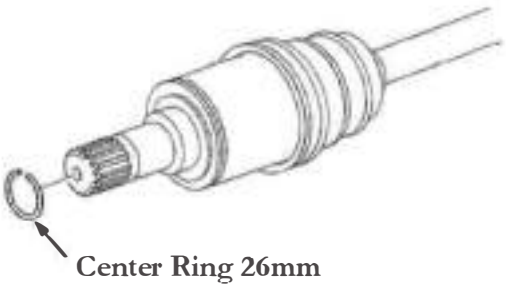


Right: 466.5-471.5mm
Left: 466.5-471.5mm

8. Attach Boot Bands as Shown in the Diagram Below



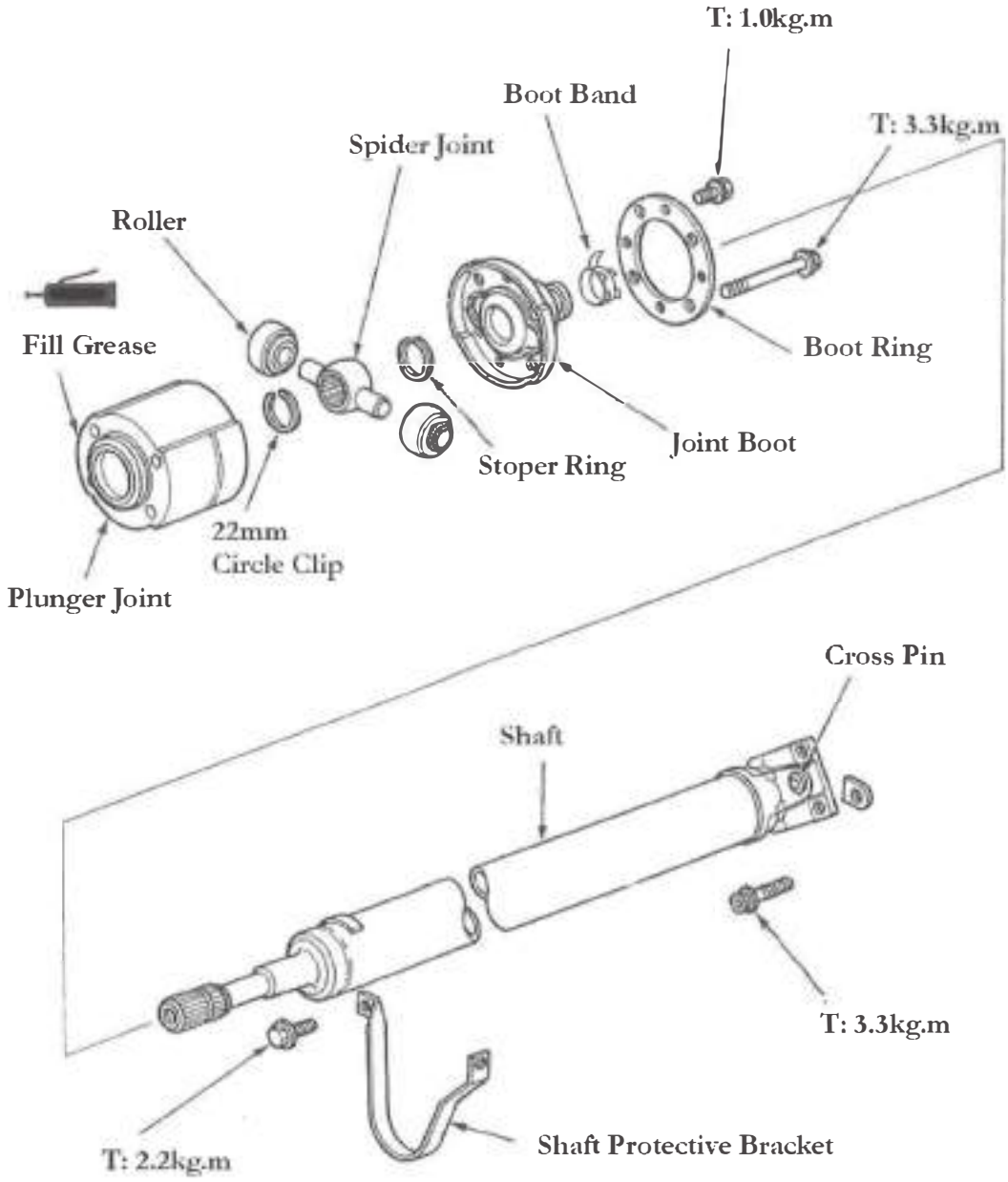
9. Attach Center Ring (26mm)



10. Install Shaft into Vehicle

Propeller Shaft

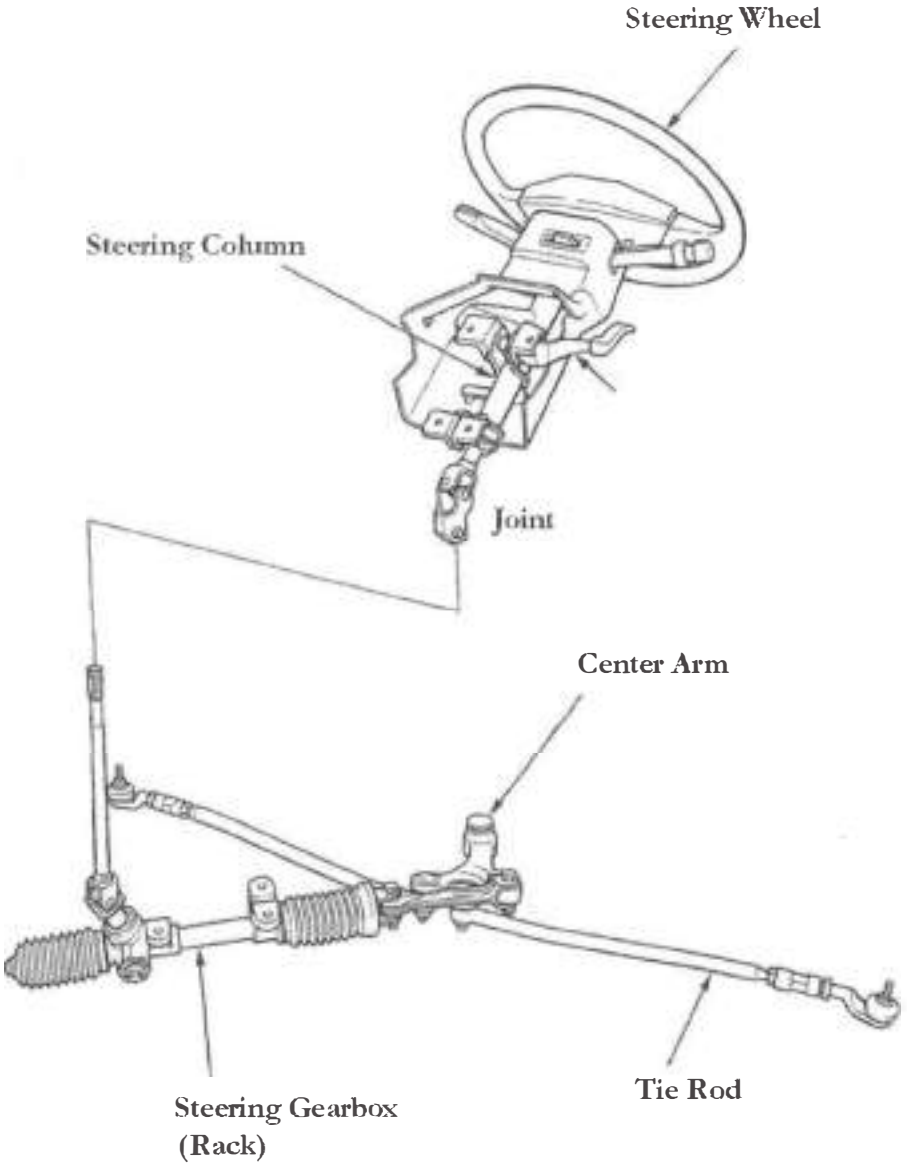
Exploded View



Chapter 9

Steering & Suspension

- Steering Components Diagram
- Steering Box Removal (Rack & Pinion)
- Gearbox Parts Exploded View
- Gearbox Overhaul
- Gearbox Assembly
- Steering Wheel Components
- Steering Column (With & Without Tilt Option)
- Steering Column Removal
- Tie Rod & Center Arm
- Tie Rod & Center Arm Removal
- Front & Rear Suspension Overview Diagram
- Wheel Alignment (Camber & Caster) Van & Truck
- Toe In & Toe Adjustment Van & Truck
- Wheel (Rim) Inspection
- Front Strut System 2WD
- Front Strut System 4WD
- Front Knuckle & Hub System 2WD
- Front Knuckle & Hub System 4WD
- Lower Arm, Stabilizer Bar, and Torsion Bar
- Front Strut Assembly
- Front Strut Removal & Replace-Inspection
- Rear Suspension & Components



Steering Gearbox Removal

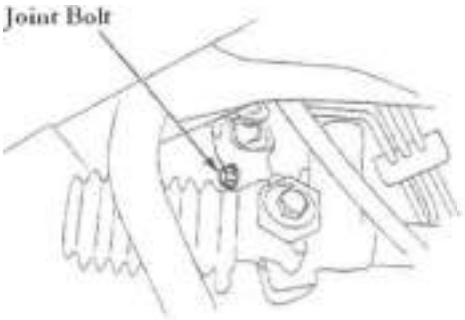
1. Use Diagram Below and Remove Front Air Duct (Cover Plate)

Front Air Duct

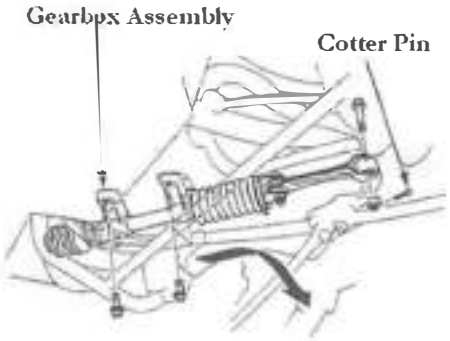
2. Remove Steering Spash Guard

Note: Replace Splash Guard if Damaged

3. Remove the Steering Joint Bolt Between Gearbox & Shaft

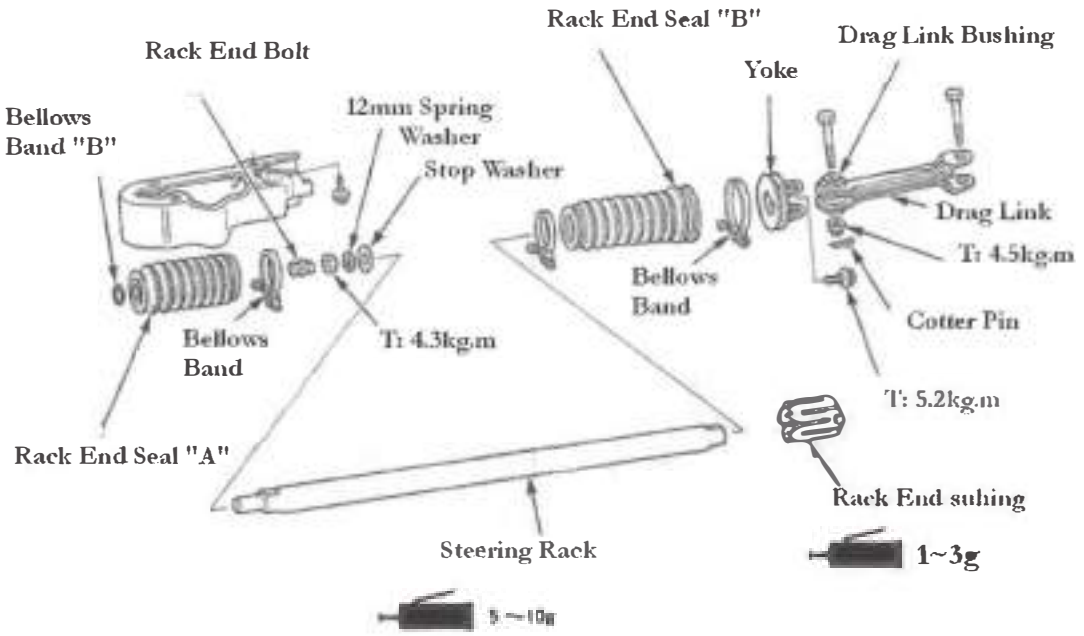


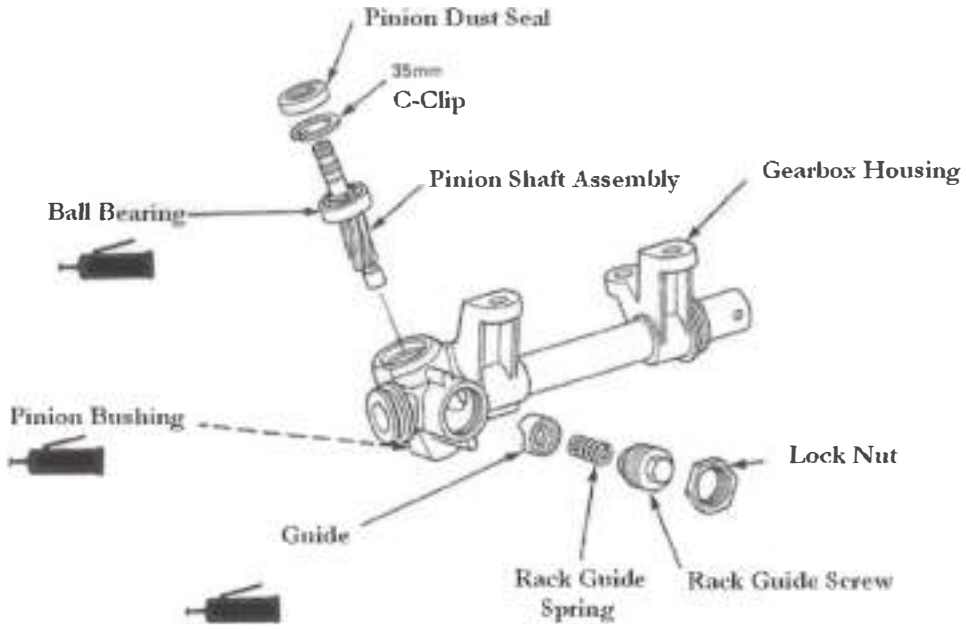
4. Disconnect Center Arm & Rack Link
5. Remove Attachment Gearbox Attachment Bolts and Remove Unit



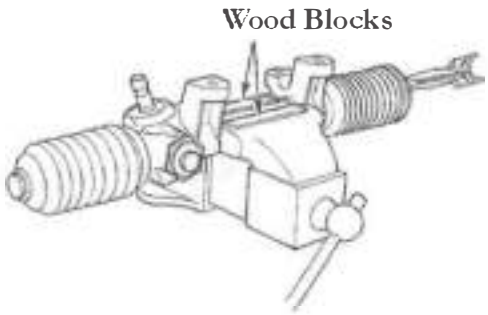
Note: Never Re-Use Cotter Pins

Gearbox Components
Exploded View

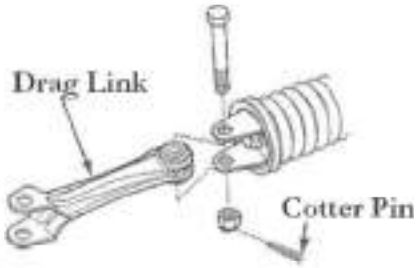




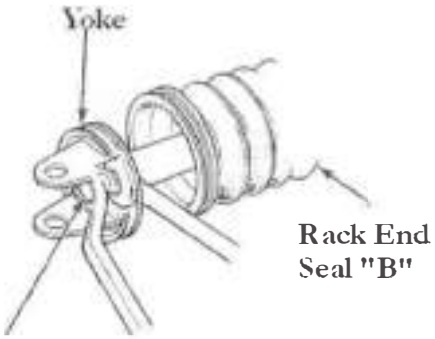
Note: Place in Vise With Wood Blocks



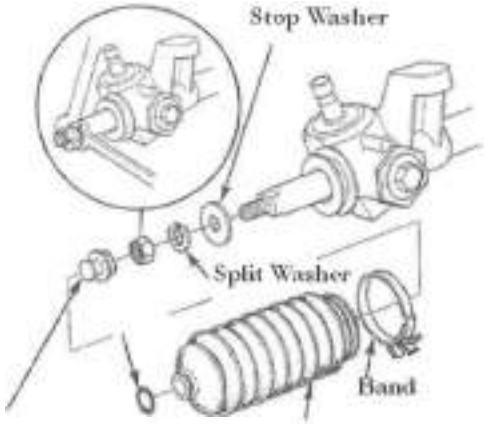
1. Remove Drag Link



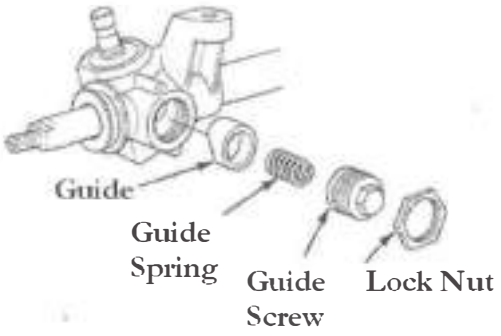
2.Remove Bellows Bands, Drag Link Yoke



4. Remove Rack End "A", and Rack End Bolt
5. Remove Components as in Diagram Below

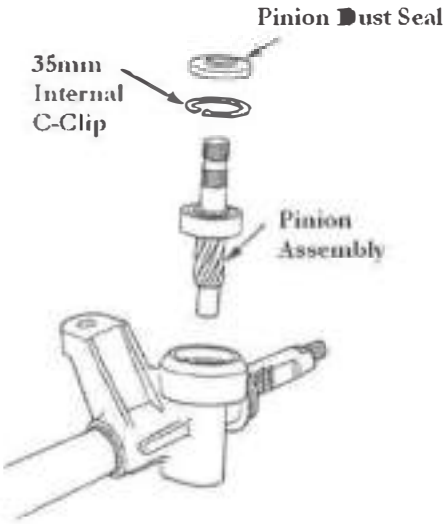


6. Disassemble the Following Below Components in the Diagram

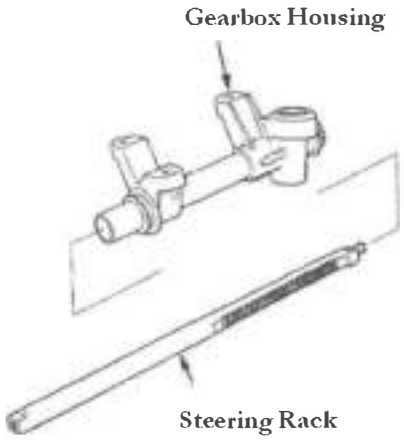


Gearbox Overhaul

7. Remove Pinion Dust Seal
8. Remove 35mm Internal C-Clip
9. Remove Pinion Assembly



10. Slide Out Steering Rack

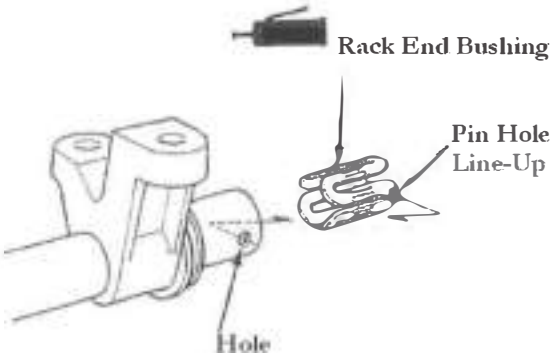


Note: Clean All Parts & Inspect. Replace All Damaged or Worn Parts. Individual Parts Can Not be Repaired

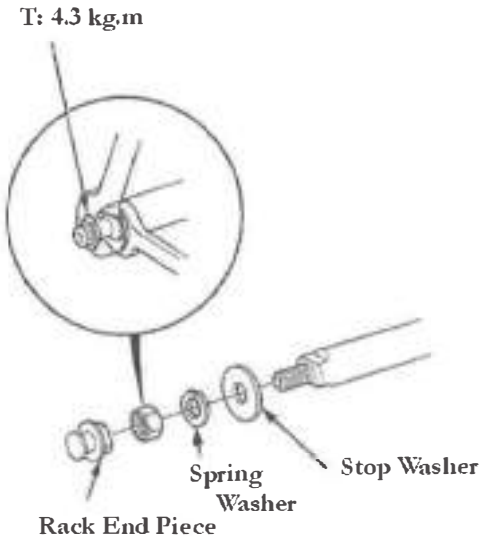
Assembly

1. Grease Rack End Bushing With Minimum 1~3g

2. Follow Diagram Below and Insert End Bushing With Dimple to Hole Configuration

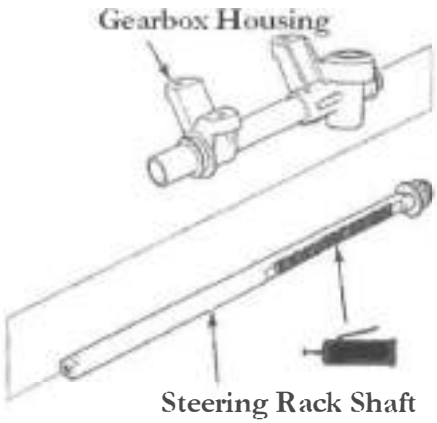


3. As in Below Diagram Assemble Parts and Torque Accordingly

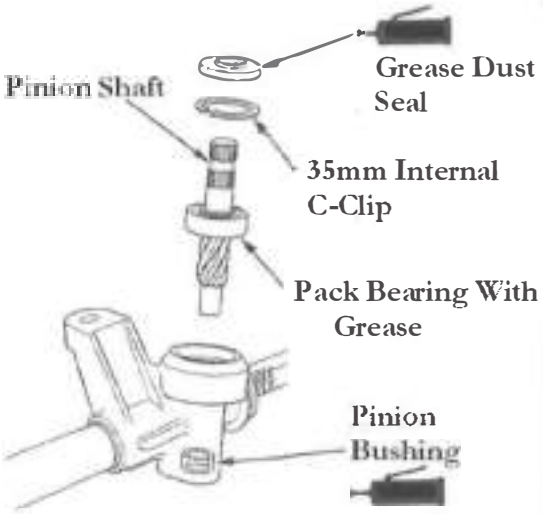


T: 0.9kg.m

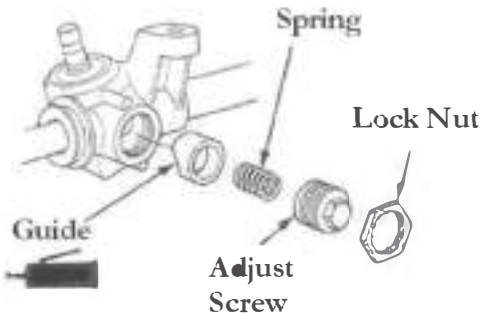
4. Coat Steering Rack Shaft With Grease And Slide Into Housing



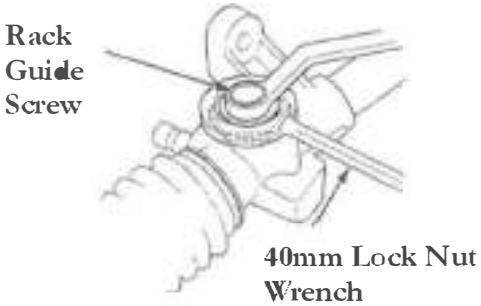
5. Assemble Pinion Shaft Assembly as in Diagram Below. Make Sure to Grease Pinion Bushing Before Assembling



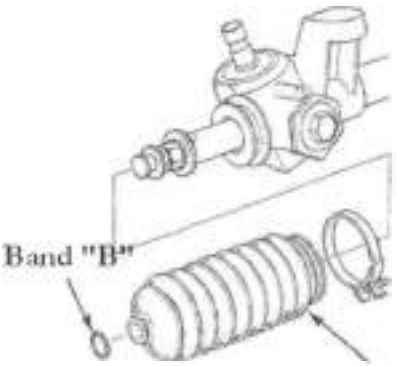
6. Assemble Guide System



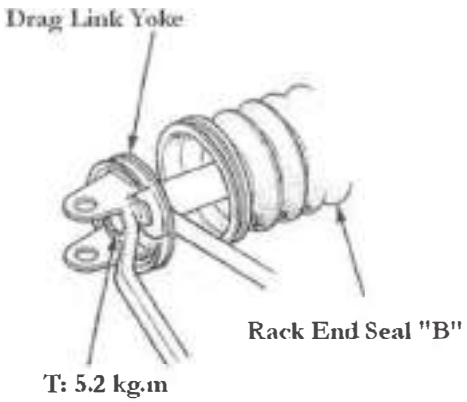
7. Use 40mm Wrench and Torque 2~3kg.m



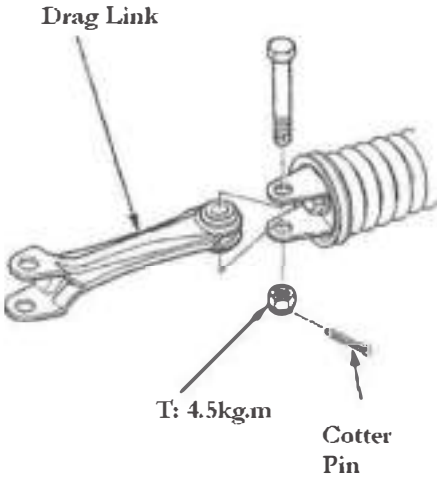
8. Assemble Rack End Seal "A" and Bands



4. Attach Rack End "B"
5. Attach Drag Link Yoke and Set Torque

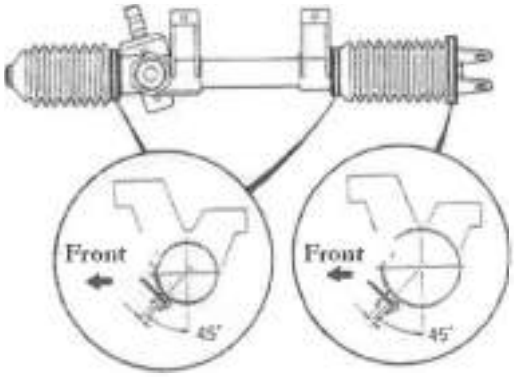


6. Attach Drag Link and Torque



Note: A New Cotter Pin Must be Used

7. Set Right~Left Bellows Bands to Diagram Below

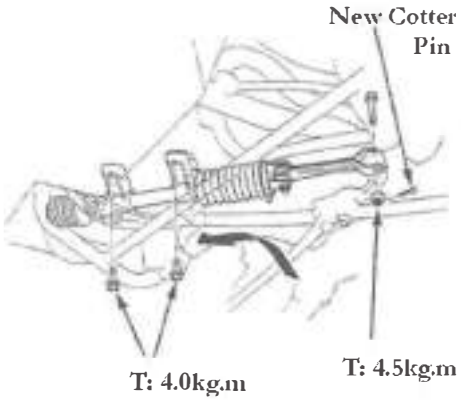


8. Install to Vehicle

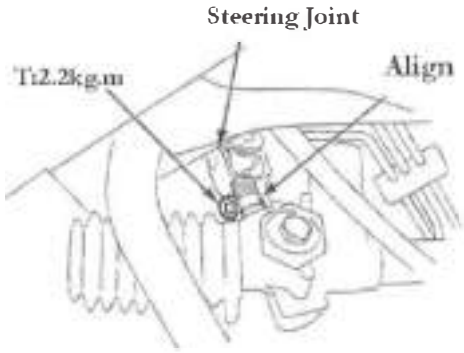
Gearbox Installation

1. Mount Gearbox and Torque to Setting Listed Below

2. Attach Drag Link and Torque



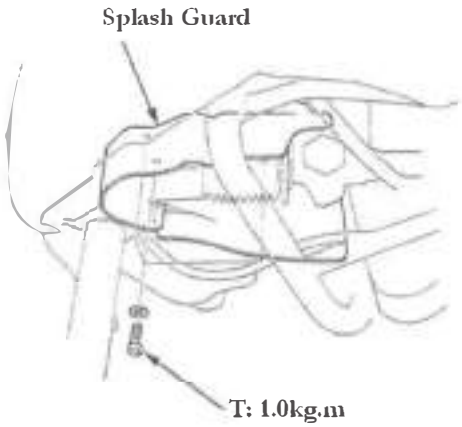
Note: Before Attaching Steering Shaft Align Front Wheels & Center Steering Wheel



3. Attach Steering Shaft and Torque

Note: Be Careful Not to Over- Torque

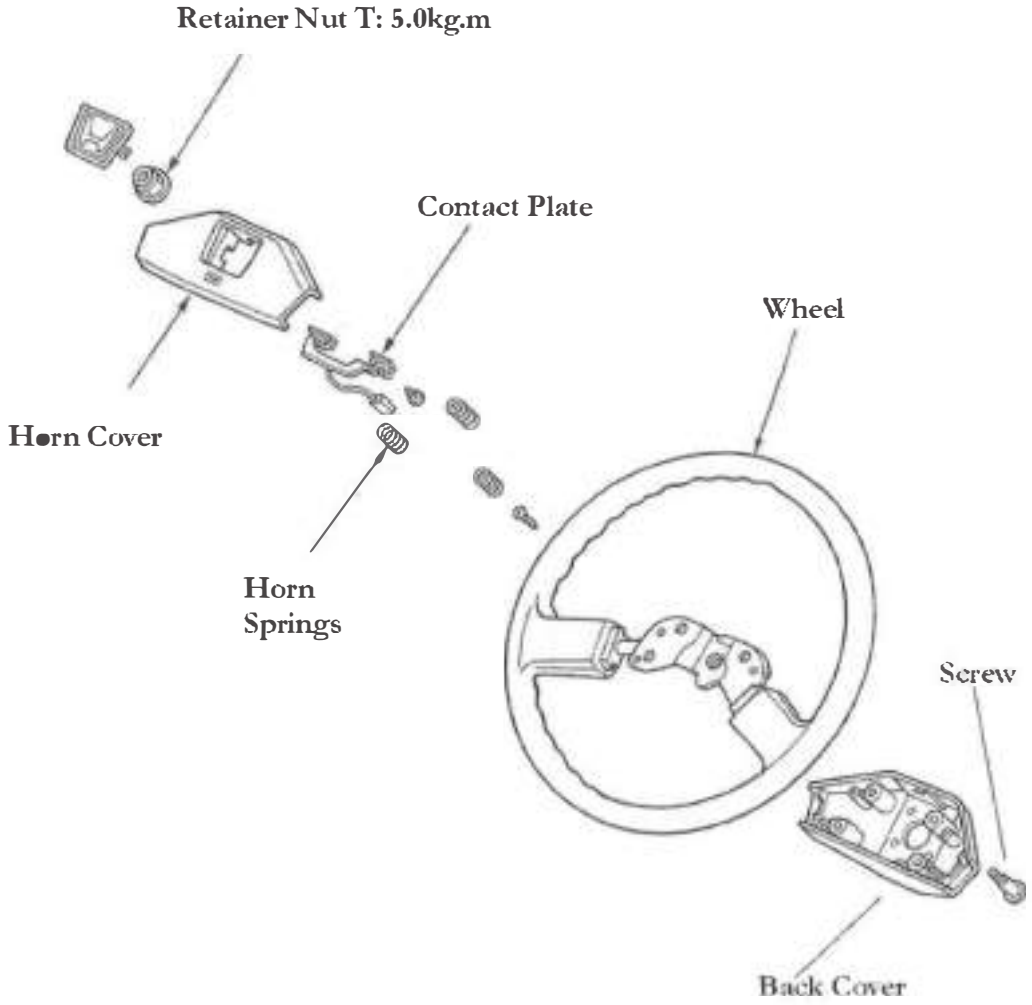
4. Attach Splash Guard



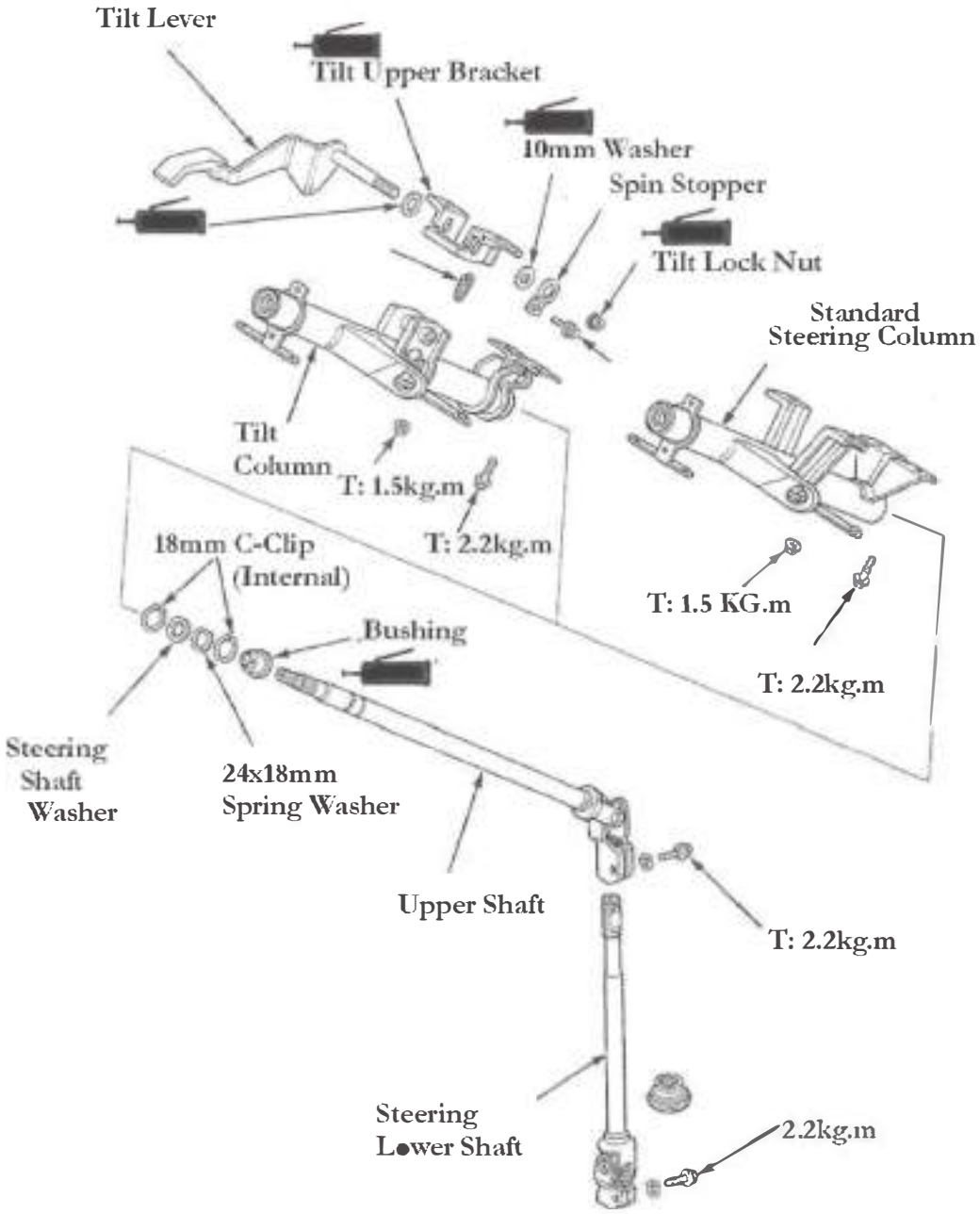
5. Attach Front Air Duct

6. Perform Front End Alignment

Steering Wheel Components

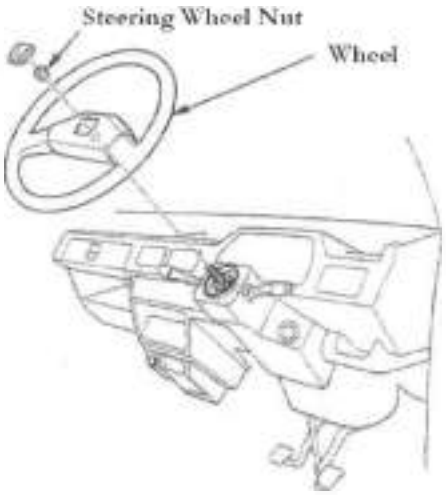


With/Without Tilt Option

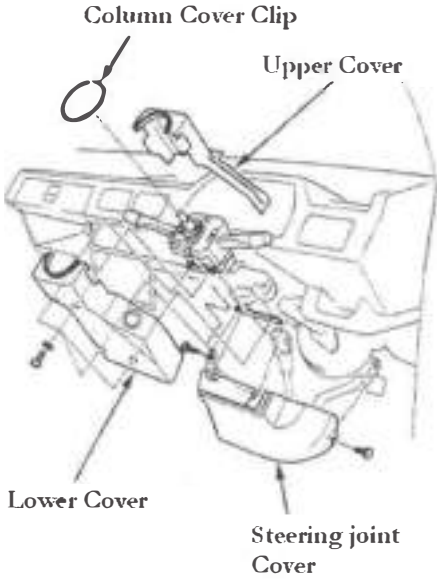


Steering Column Removal

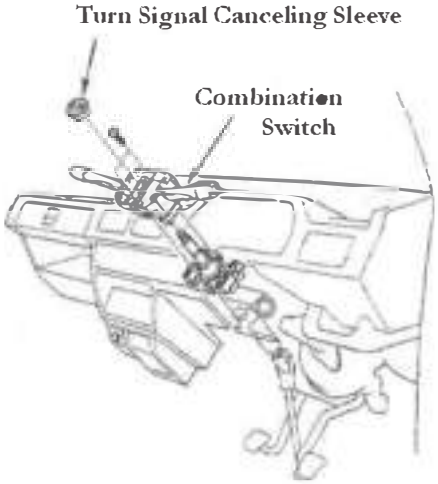
1. Remove Steering Wheel



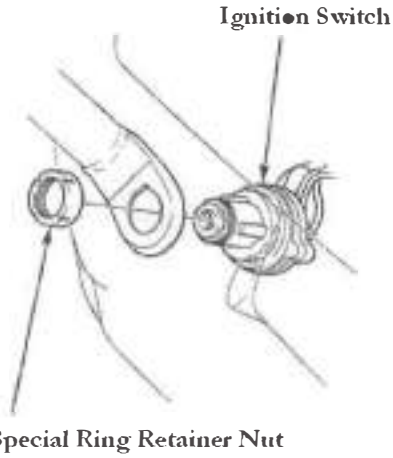
2. Remove Column Cover Clip
3. Remove Upper & Lower Covers
4. Remove Steering Joint Cover



5. Disconnect Combination Switch Electrical Connector
6. Remove Sleeve and Switch Assembly



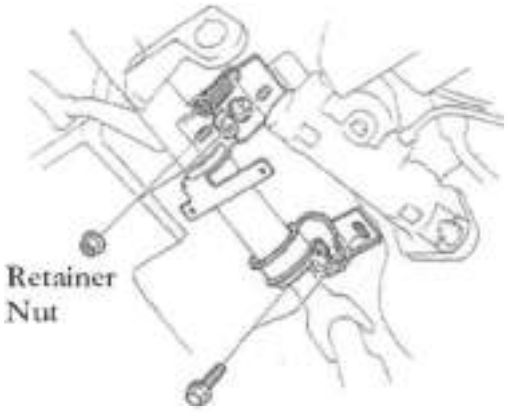
7. Remove Ring Nut and Slide Out Ignition Switch



8. Remove Steering Joint Bolt

Joint BoltMount Bolt

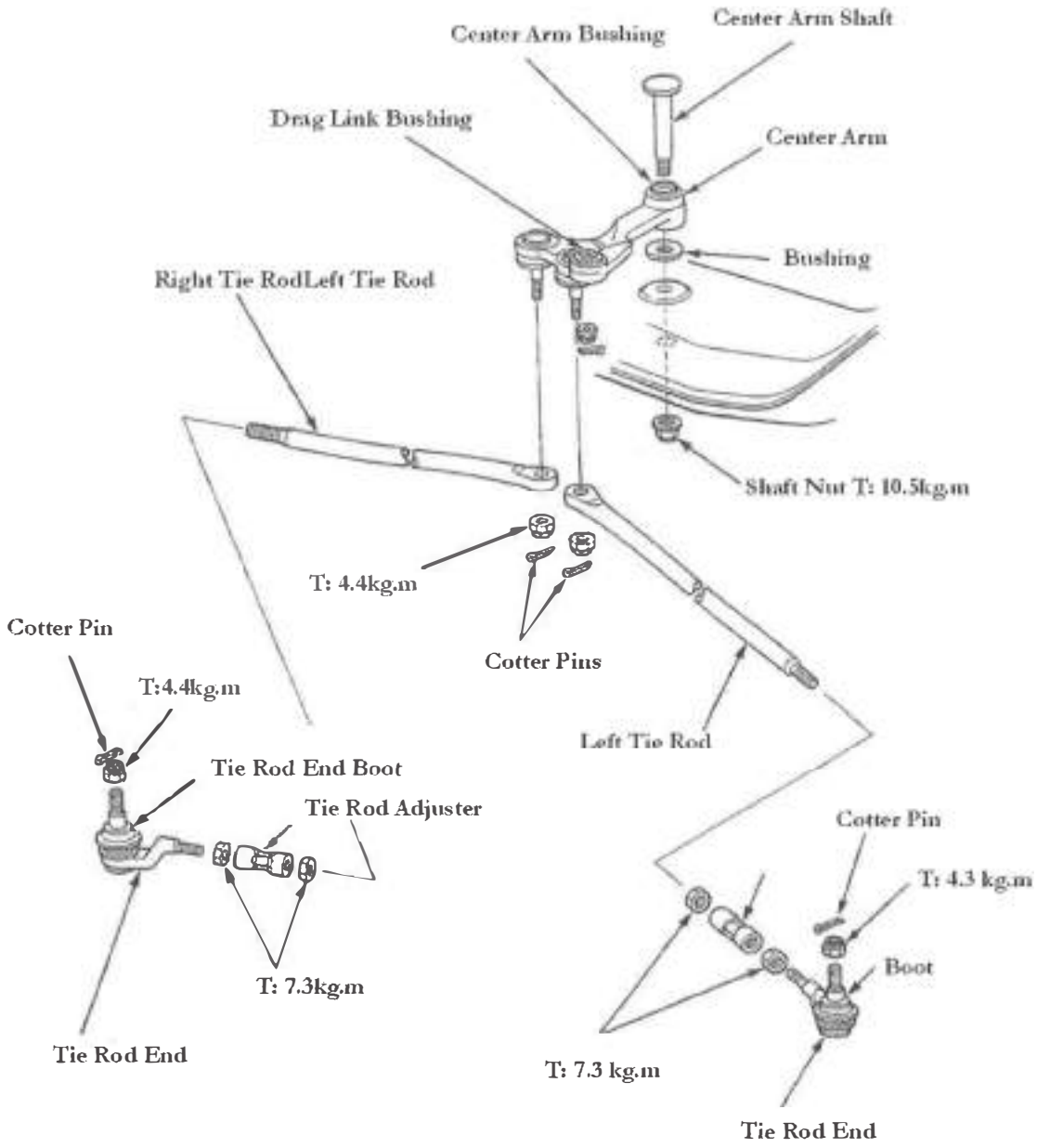
9. Remove Attachment Bolt and Retainer Nut
10. Remove Column
11. Install Reverse Order



Mount Bolt

Tie Rod & Center Arm

Exploded View

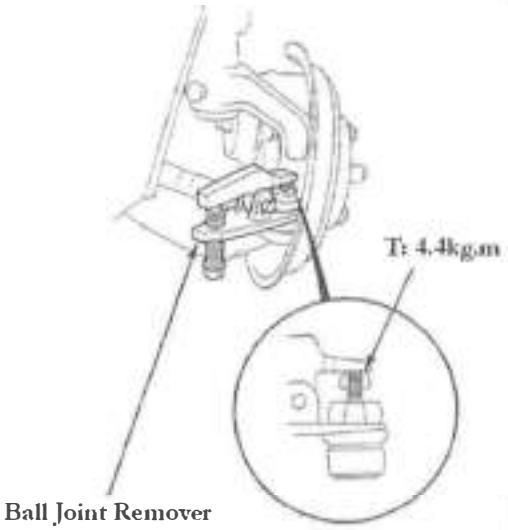


Note: Always Replace Cotter Pins

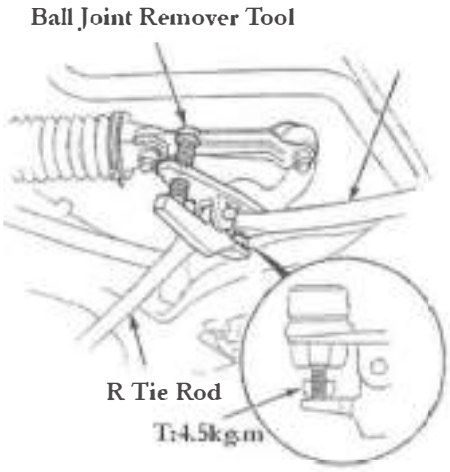
Tie Rod & Center Arm

Removal

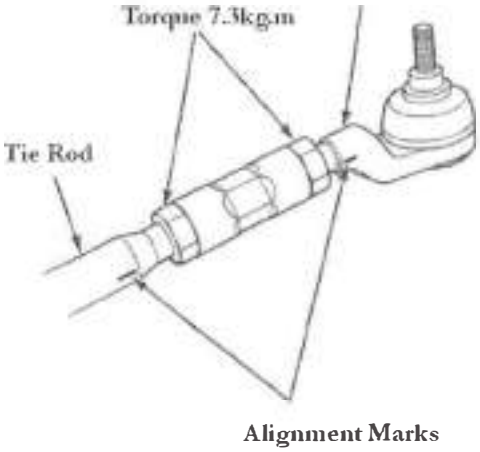
1. Remove Cotter Pin and Retainer Nut
2. Attach Ball Joint Removal Tool (See Diagram Below) Press Out Joint



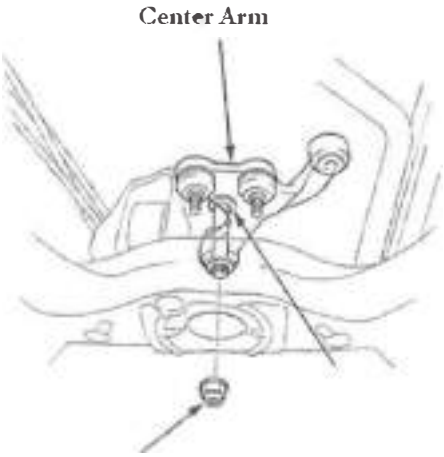
3. Center Arm Removal, Remove All Cotter Pins and Three Retaining Nuts. Press Out Ends



4. Seperate Tie Rod End Loosen Lock Nut and Unsrew End

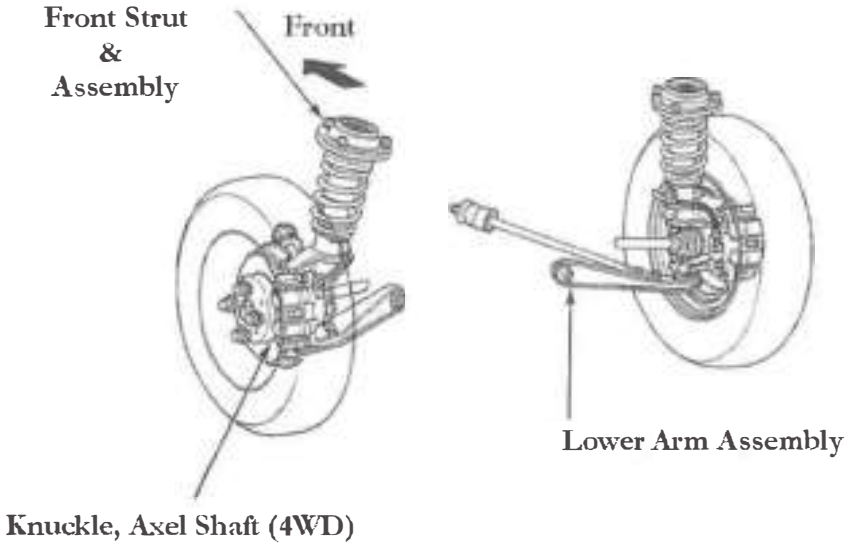


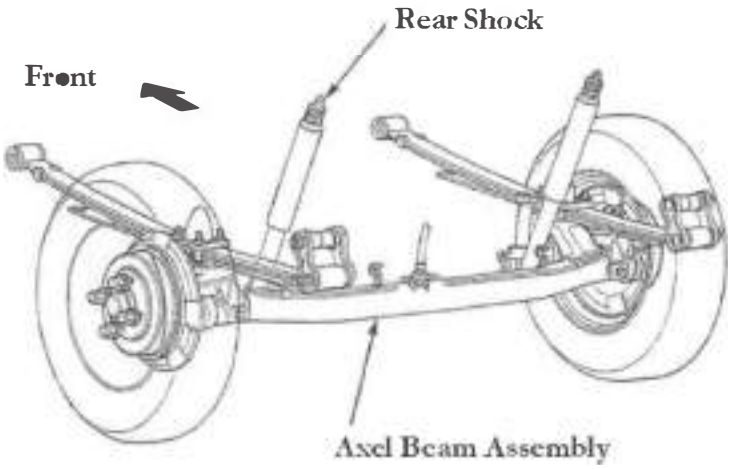
5. After Removing Center Arm Inspect Steering Arm Shaft For Straightness



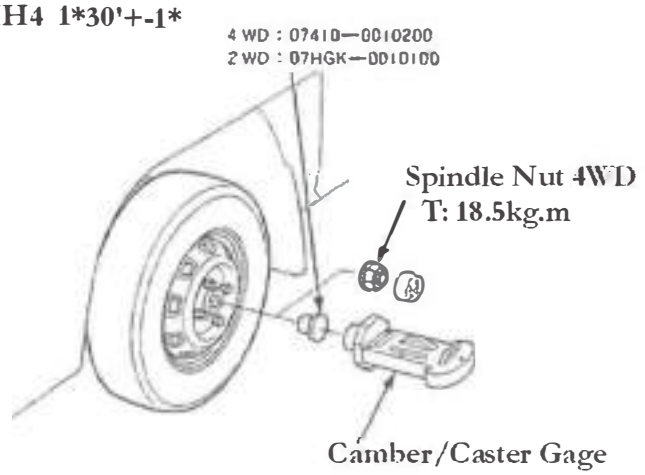
Note: Replace Steering Nut if Corroded or Rounded Sides

Exploded View

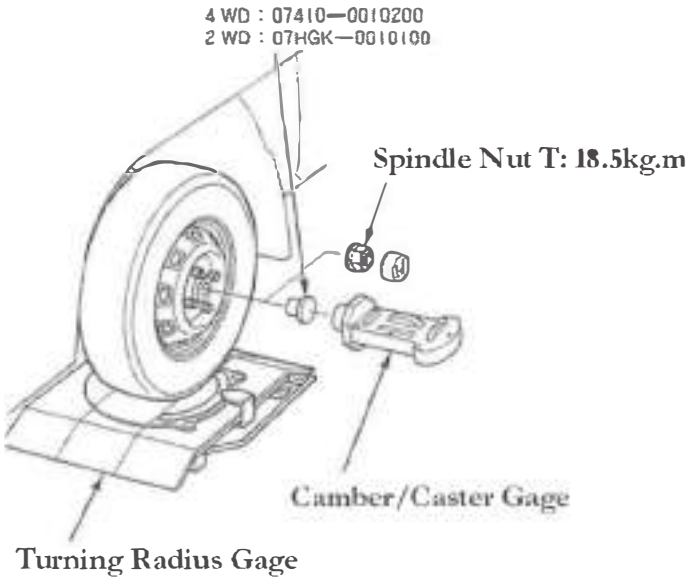




Camber Specifications:
Vehicle
M-HA3 1*00'+-1*
M-HH3 1*20'+-1*
M-HA4, HH4 1*30'+-1*



Caster Specifications:
Vehicle
M-HA3, HA4, HH4 2*30'+-1*
M-HH3 2*50'+-1*



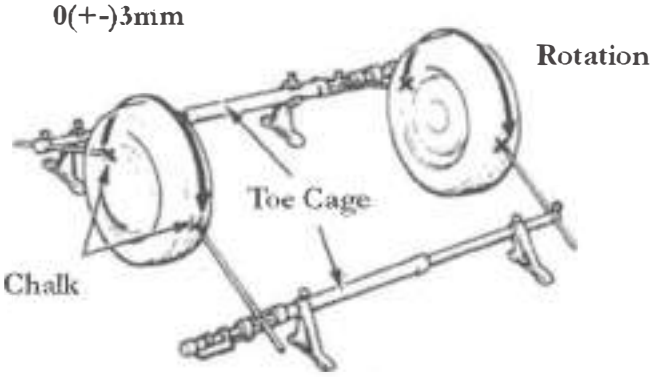
Note: Make Sure Tires Are Properly Inflated and Correct Size

Note: (* Mark) = Degrees

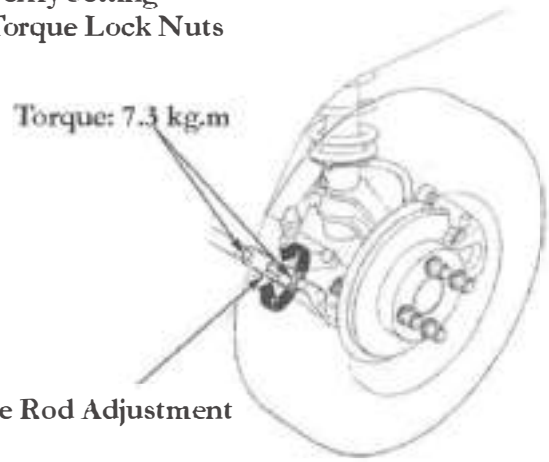
Toe In and Toe Adjustment Specifications

Note: Make Sure to Check Air Pressure and Tire Size Before Adjustments

Toe-In (All Models)
Front: IN 1(+-)3mm
Rear: 0(+-)3mm



Tie Rod Adjustment:
1. Loosen Lock Nuts
2. Set Adjustment
3. Verify Setting
4. Torque Lock Nuts

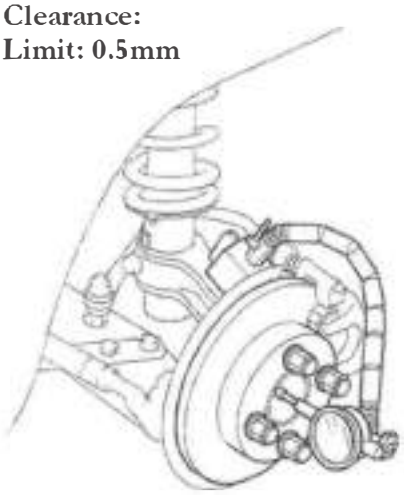


Side Slip Limitations: Front Wheels 0(+-)3mm

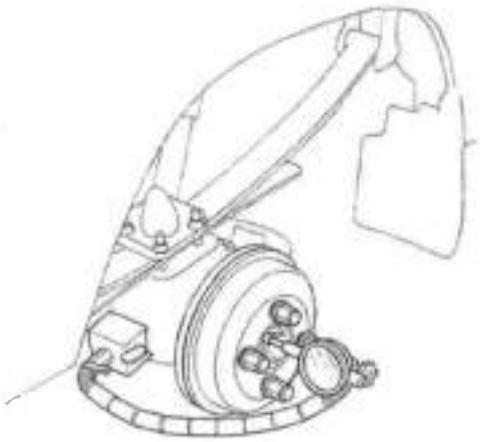
Wheel Inspection

Bearing End Check

1. Attach Dial Gage
2. Turn Rotor and Inspect Round-Out Clearance:
   Limit: 0.5mm

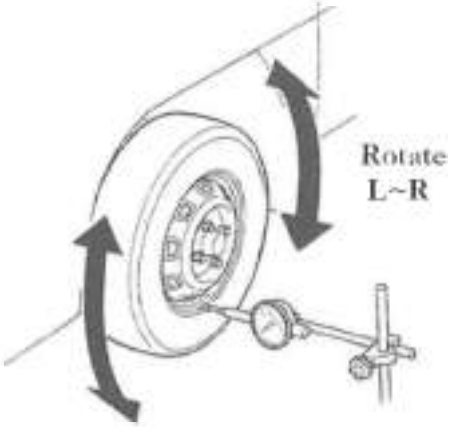


3. Rear Wheel Inspection
   Limit: 0.3mm

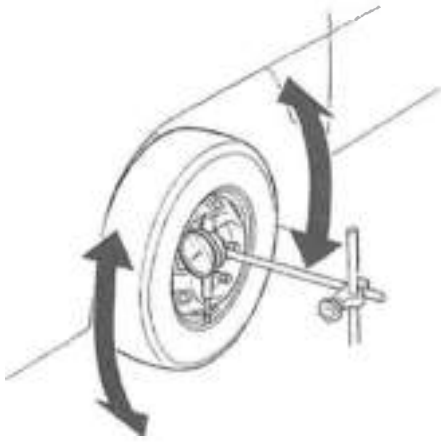


Wheel Rim Inspection

Rim Round-Out Limit:
Steel Wheel: 0~1.3mm
Aluminum: 0~0.7mm



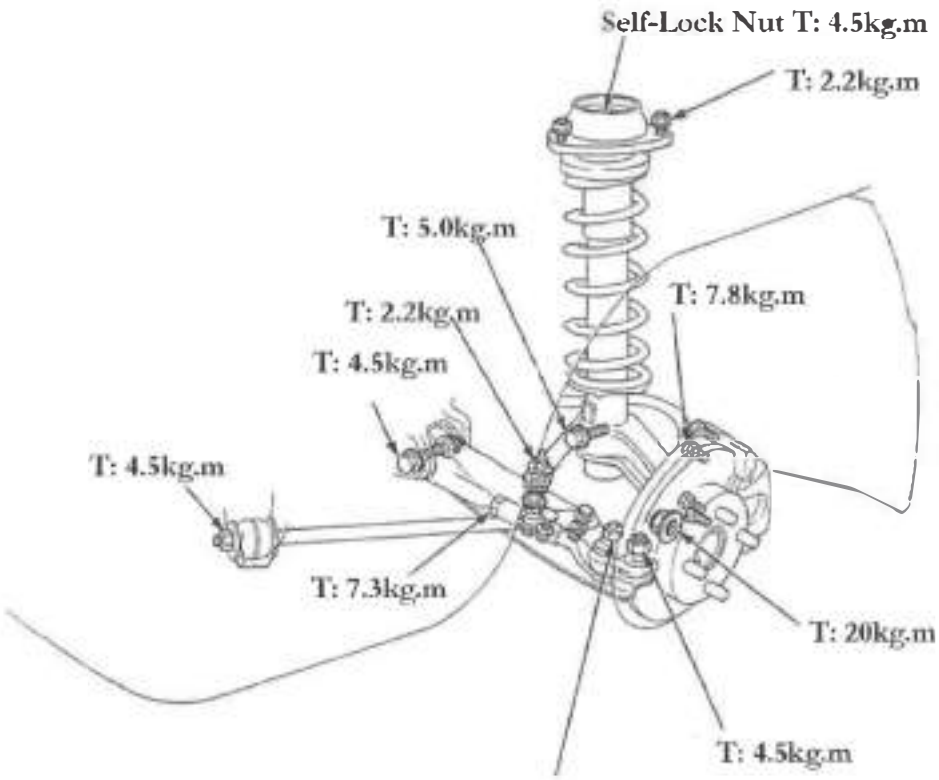
Note: Rims Can Not Be Repaired, Only Replaced



Inside Round-Out Clearance
Limit:
Steel Wheel: 0~1.0mm
Aluminum: 0~0.7mm

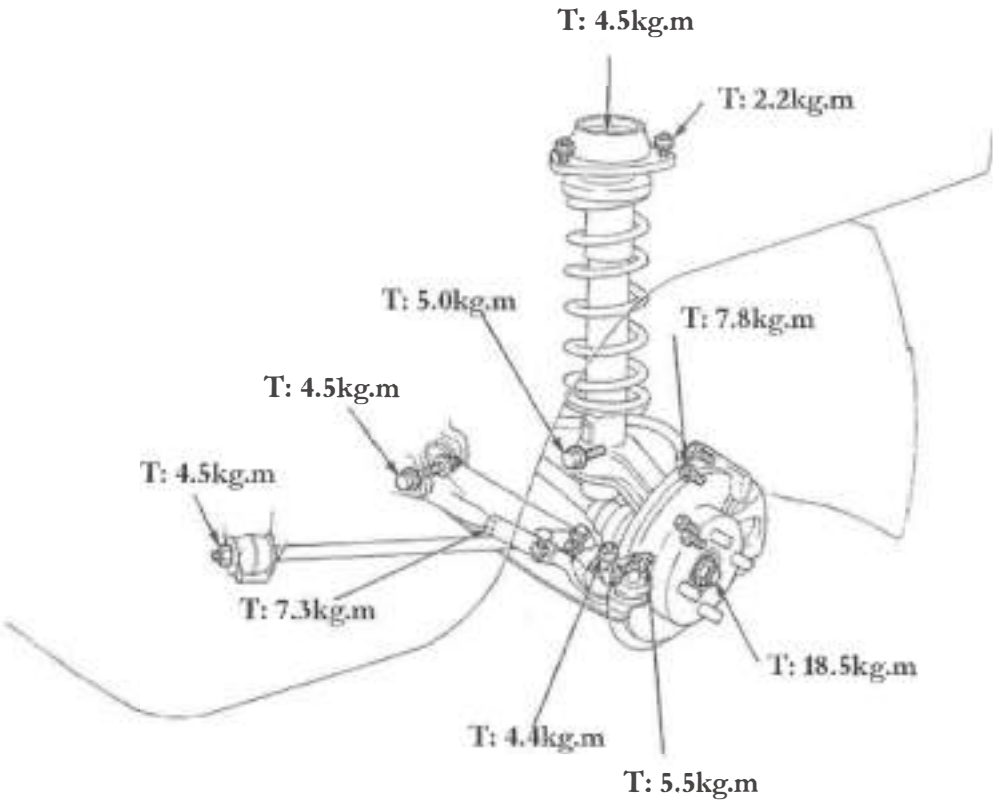
Exploded View

Torque Guide



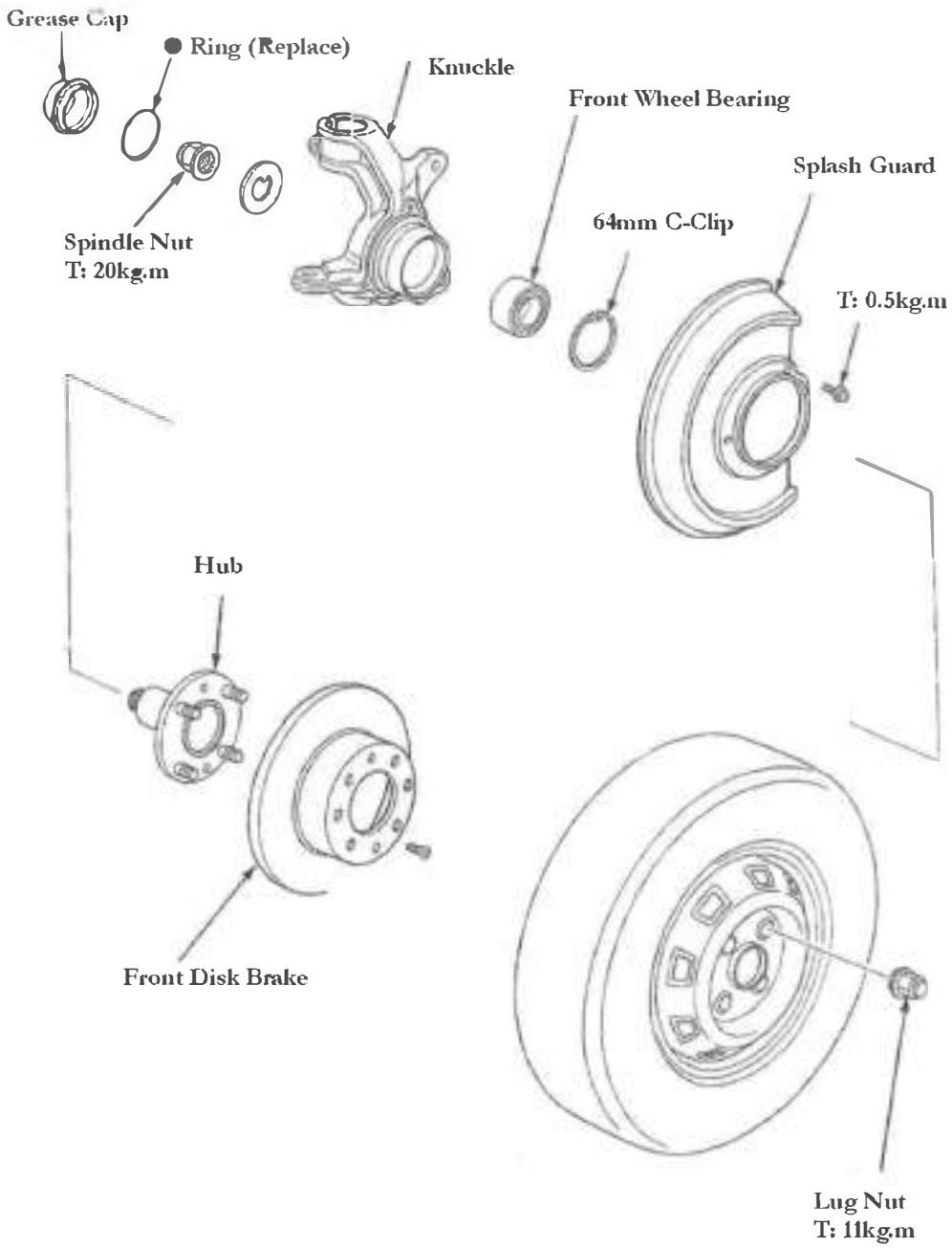
Exploded View

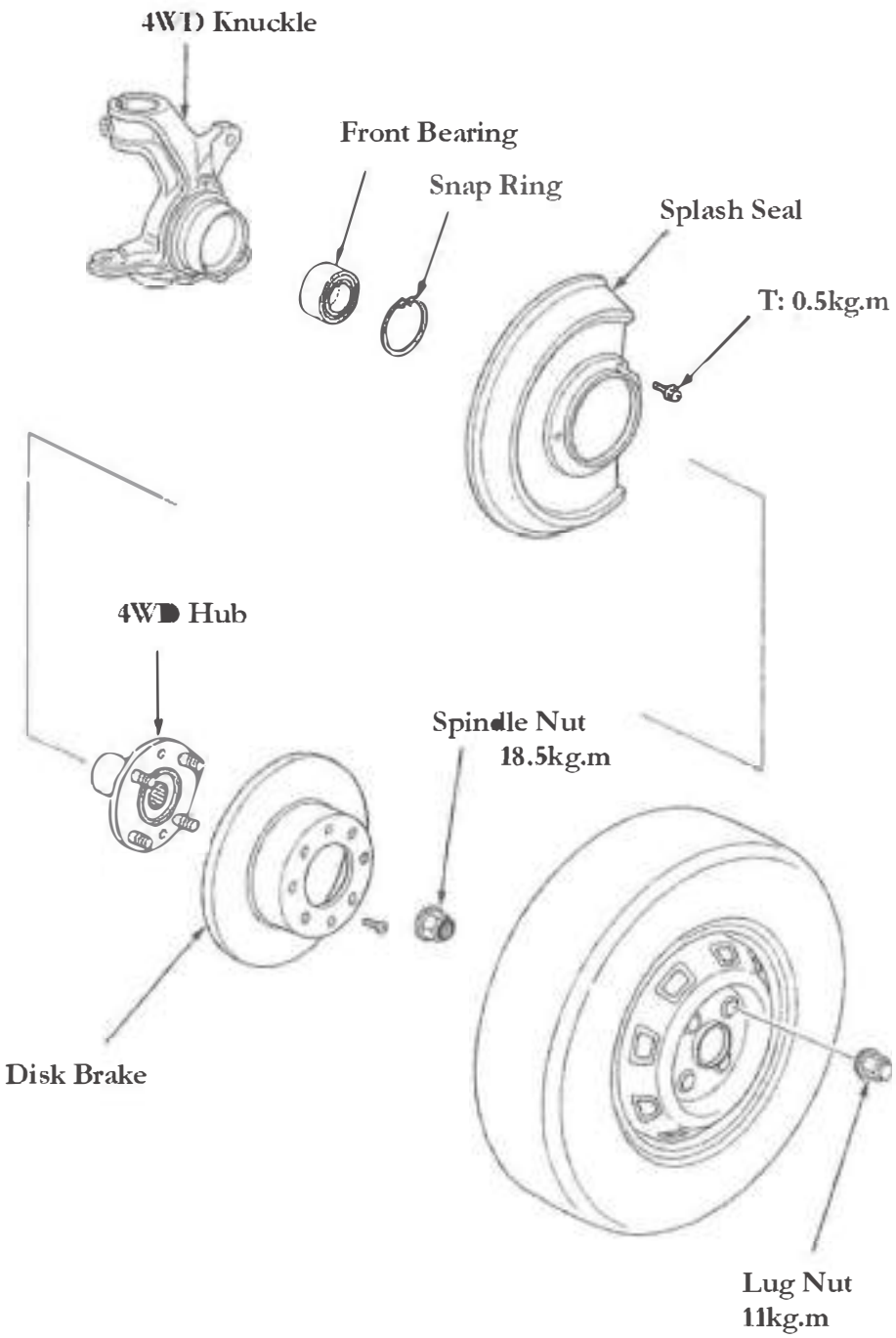
Torque Guide



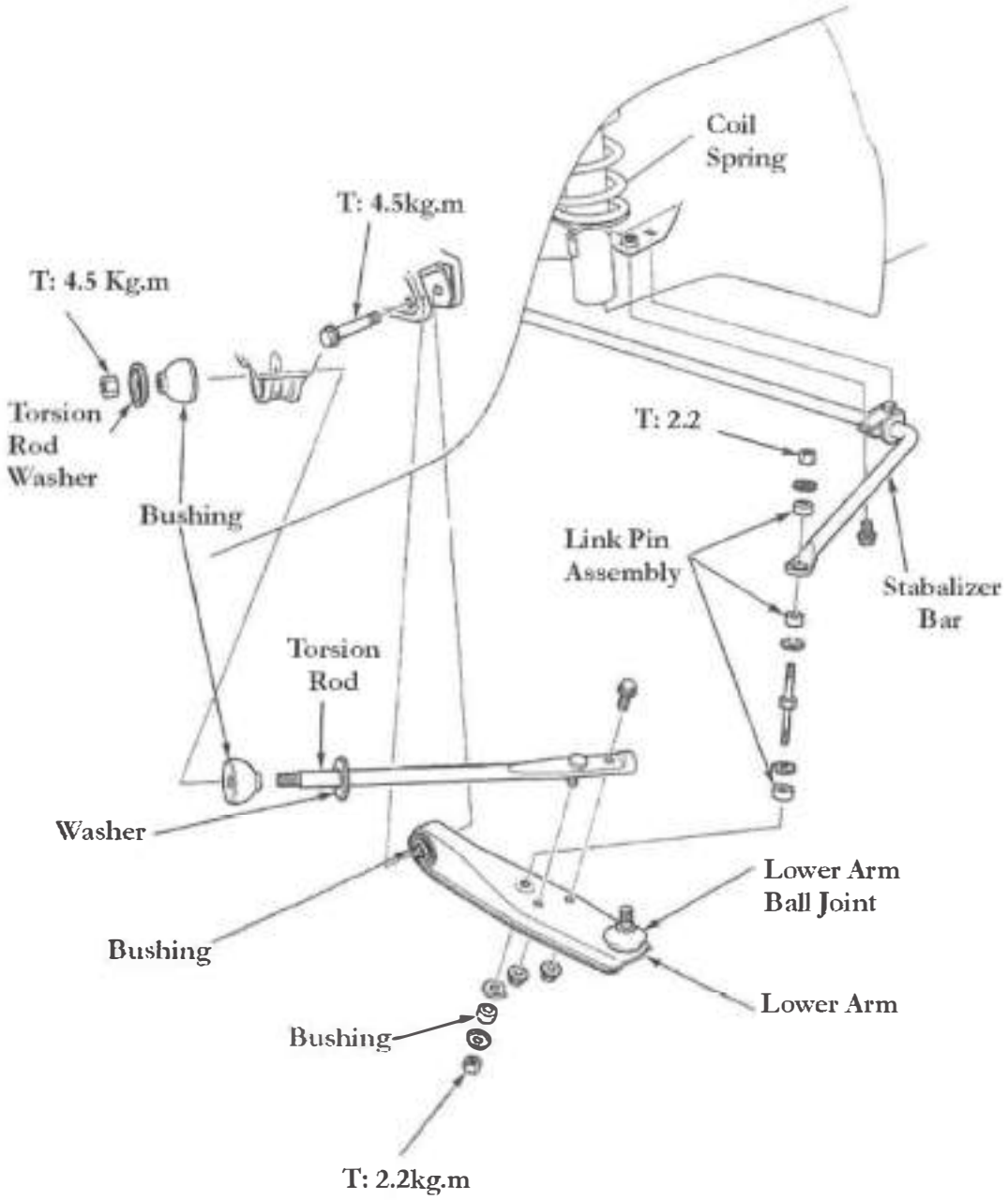
Front Suspension 2WD

Exploded View

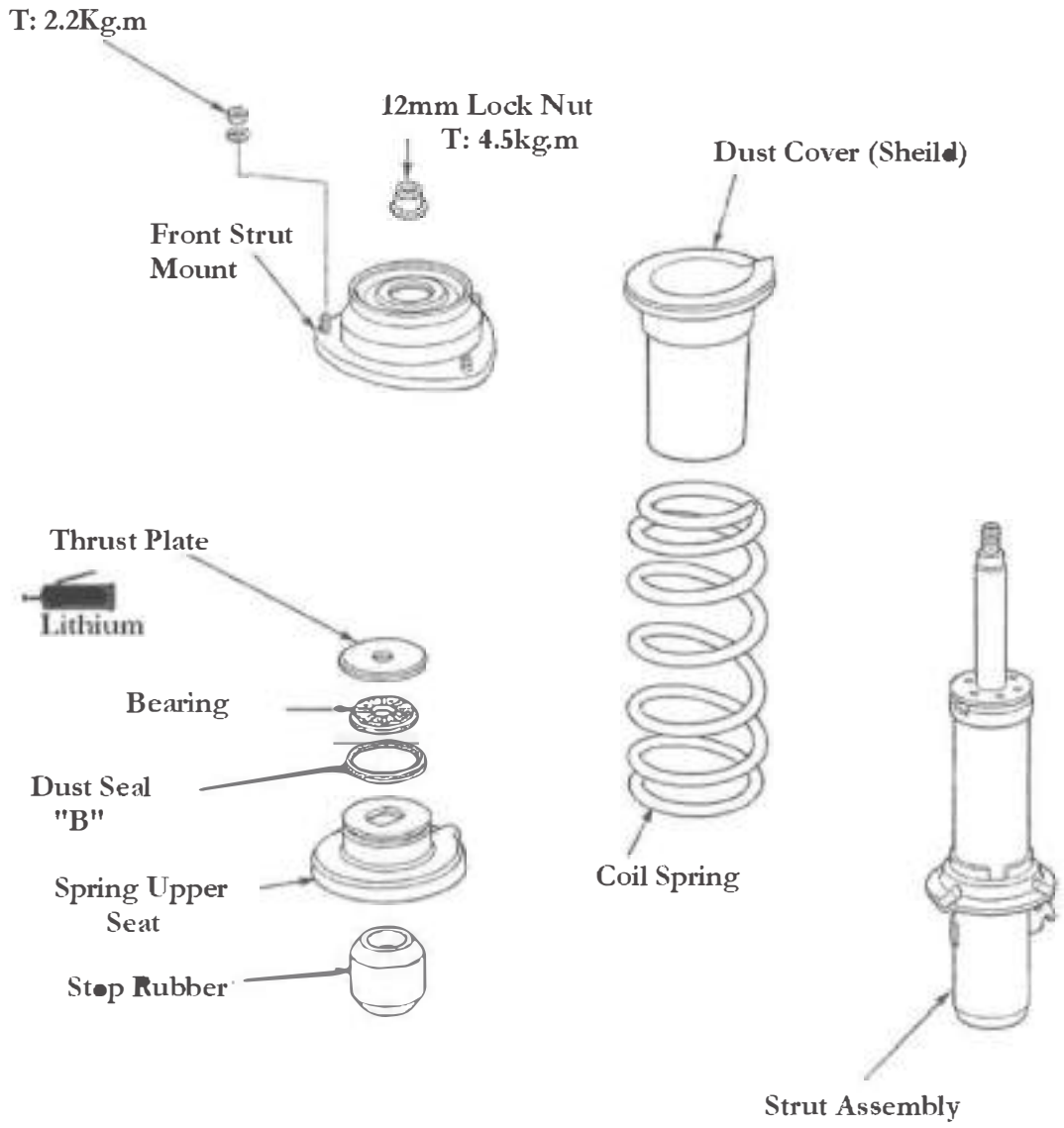




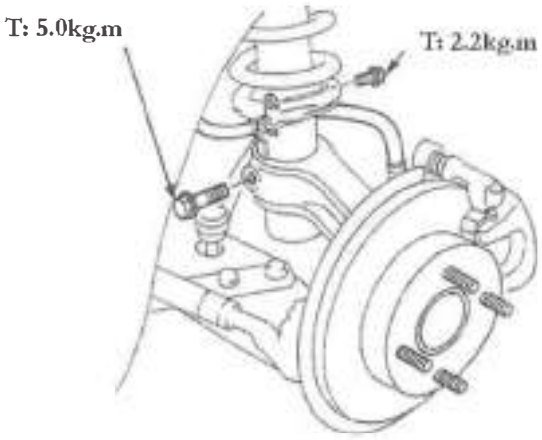
Lower Arm - Stabalizer Bar - Torsion Bar

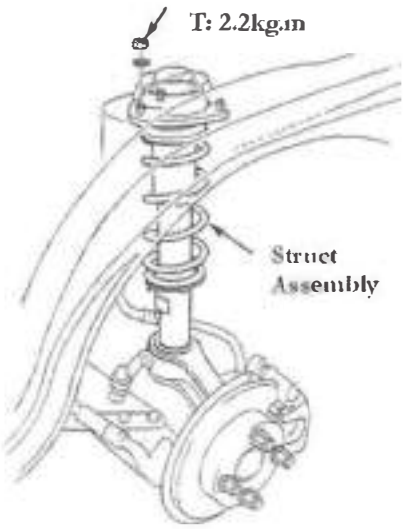


Front Strut Assembly



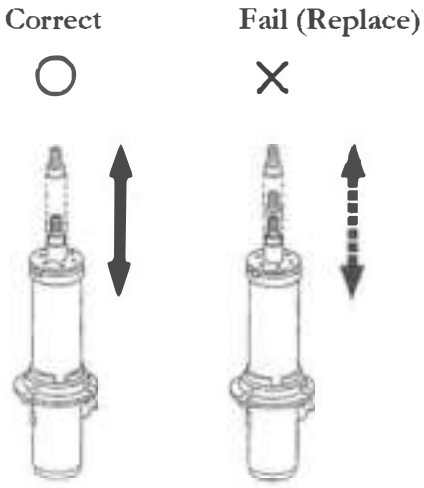
1. Jack Vehicle
2. Remove Front Wheel(s)
3. Remove Grease Cover
4. Remove Brake Hose Strut Clip
5. Remove Lower Strut Attachment Bolt



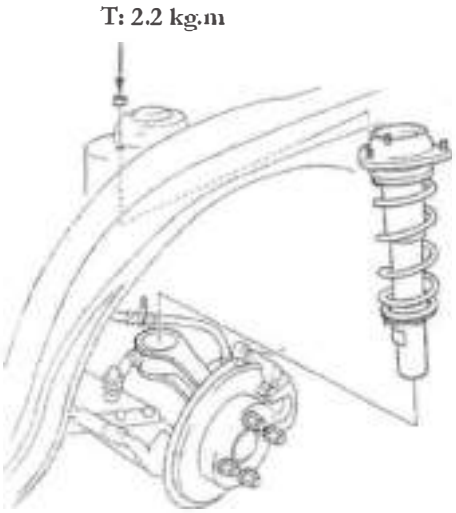


6. Lower Knuckle Assembly
7. Remove Upper Attachment Bolts
8. Slide Out Strut Assembly

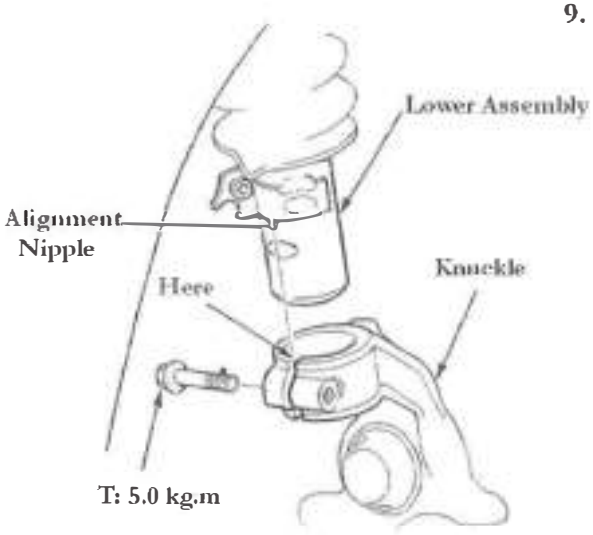
Note: Check Strut for Up/Down Action



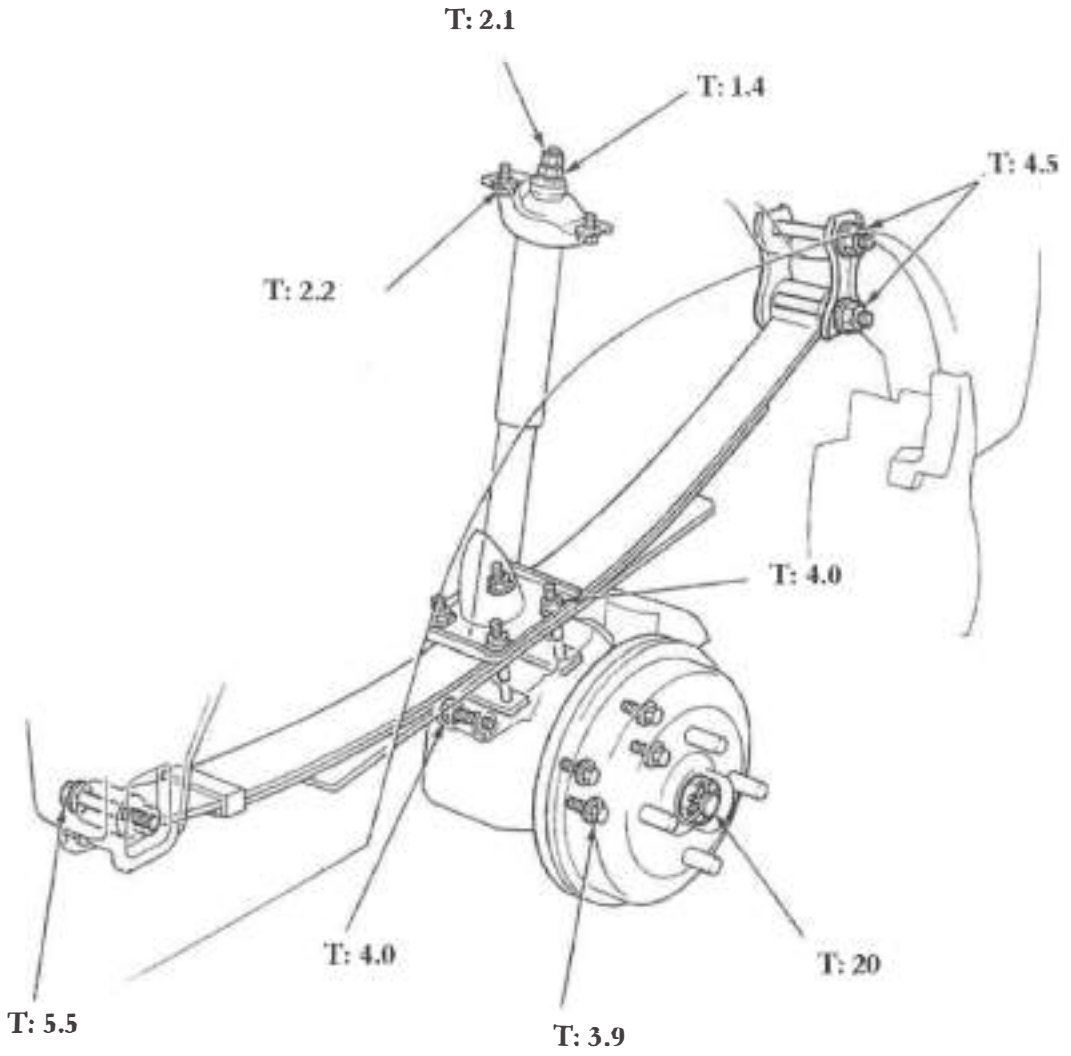
Front Strut Attachment



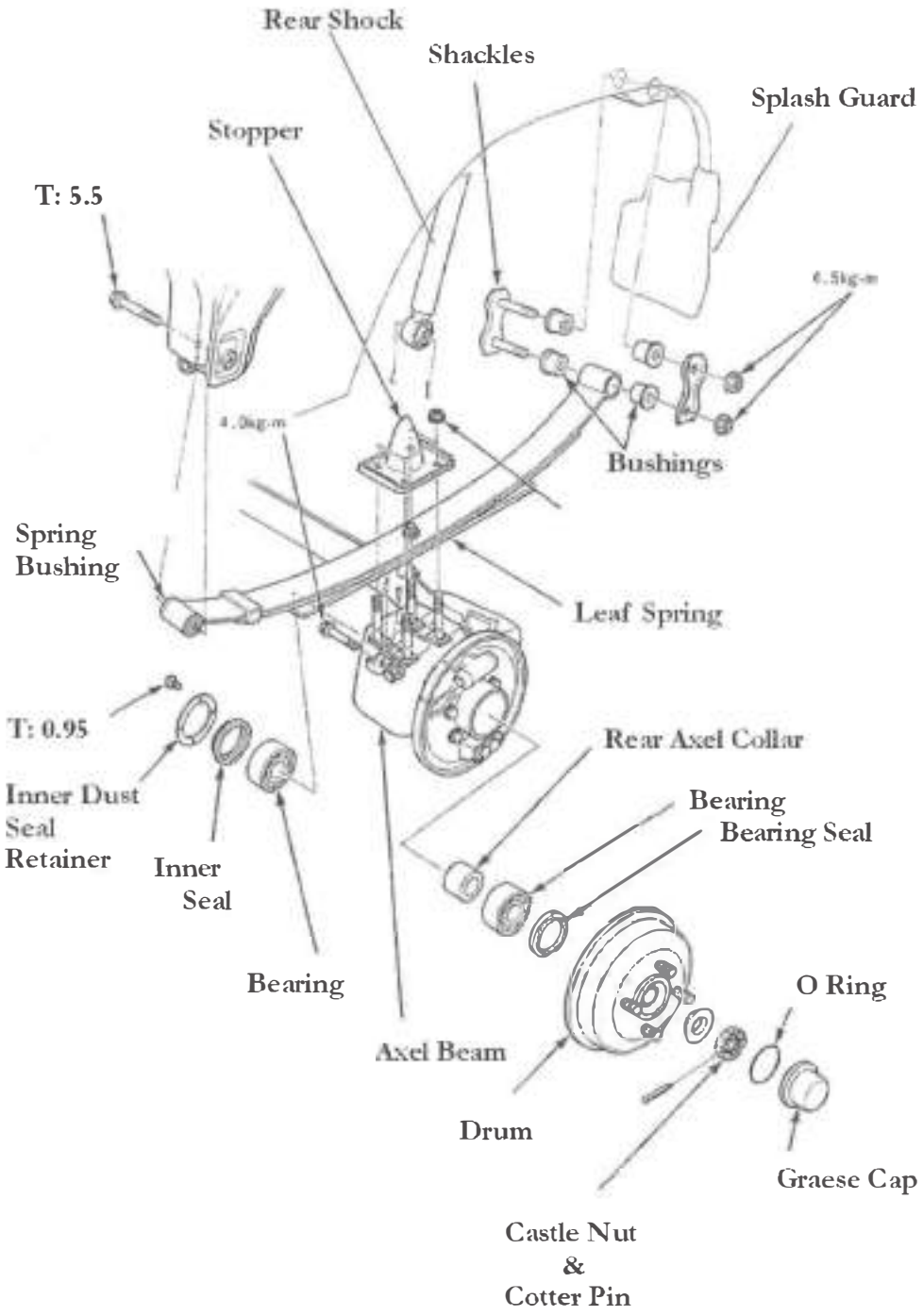
1. Use The Diagram on Left and Slide in Strut Assembly
2. Pay Attention to Alignment Nipple in Diagram Bottom Left
3. Attach Lower Bolt
4. Attach Upper Bolts
5. Attach Brake Line Clip
6. Torque All Bolts
7. Attach Grease Cap
8. Attach Tire(s)
9. Lower Vehicle



Torque=kg.m



Torque=T: Kg.m



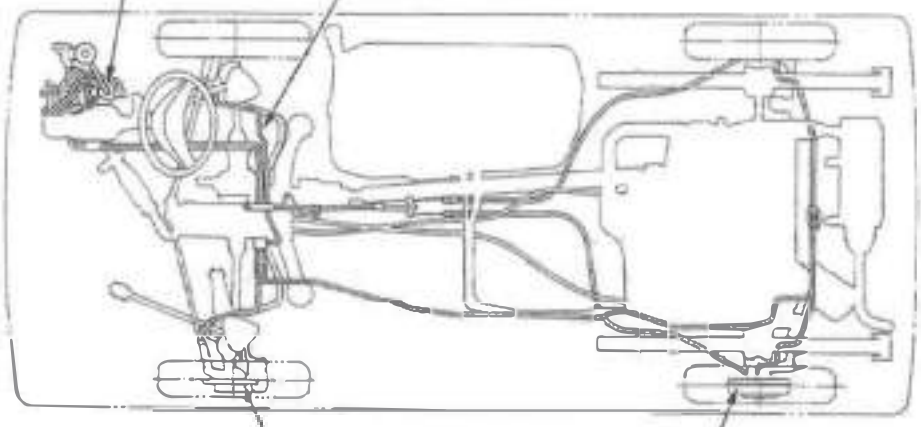
Chapter 10

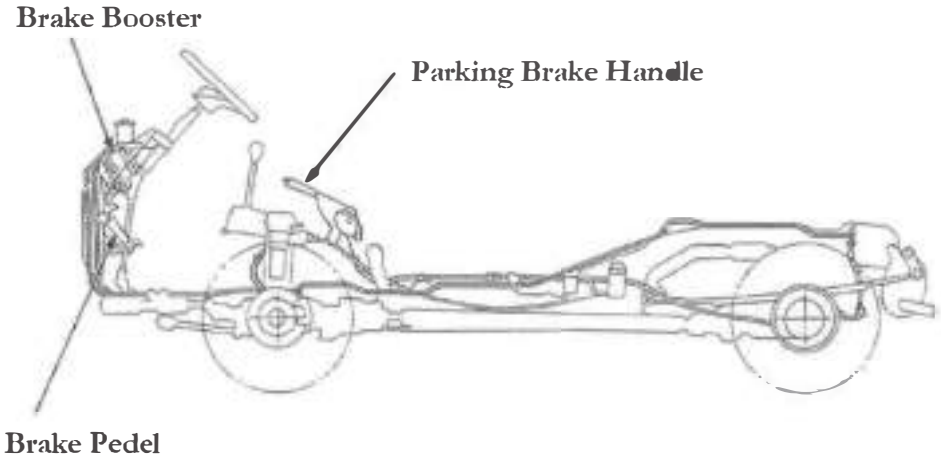
Brake System

- Brake System Schematic Top & Side View
- Front Disk Brake Caliper System Components
- Front Disk Brake Pad Replacement
- Disk Brake Rotor Measurements & Inspection
- Master Cylinder System & 5 Way Directional Fluid Joint
- Master Cylinder Breakdown Components
- Brake Booster Components
- Rear Drum Brake System
- Pad & Drum Specifications
- Drum Brake Wheel Cylinder
- Parking Brake Handle and Cable System

Brake System

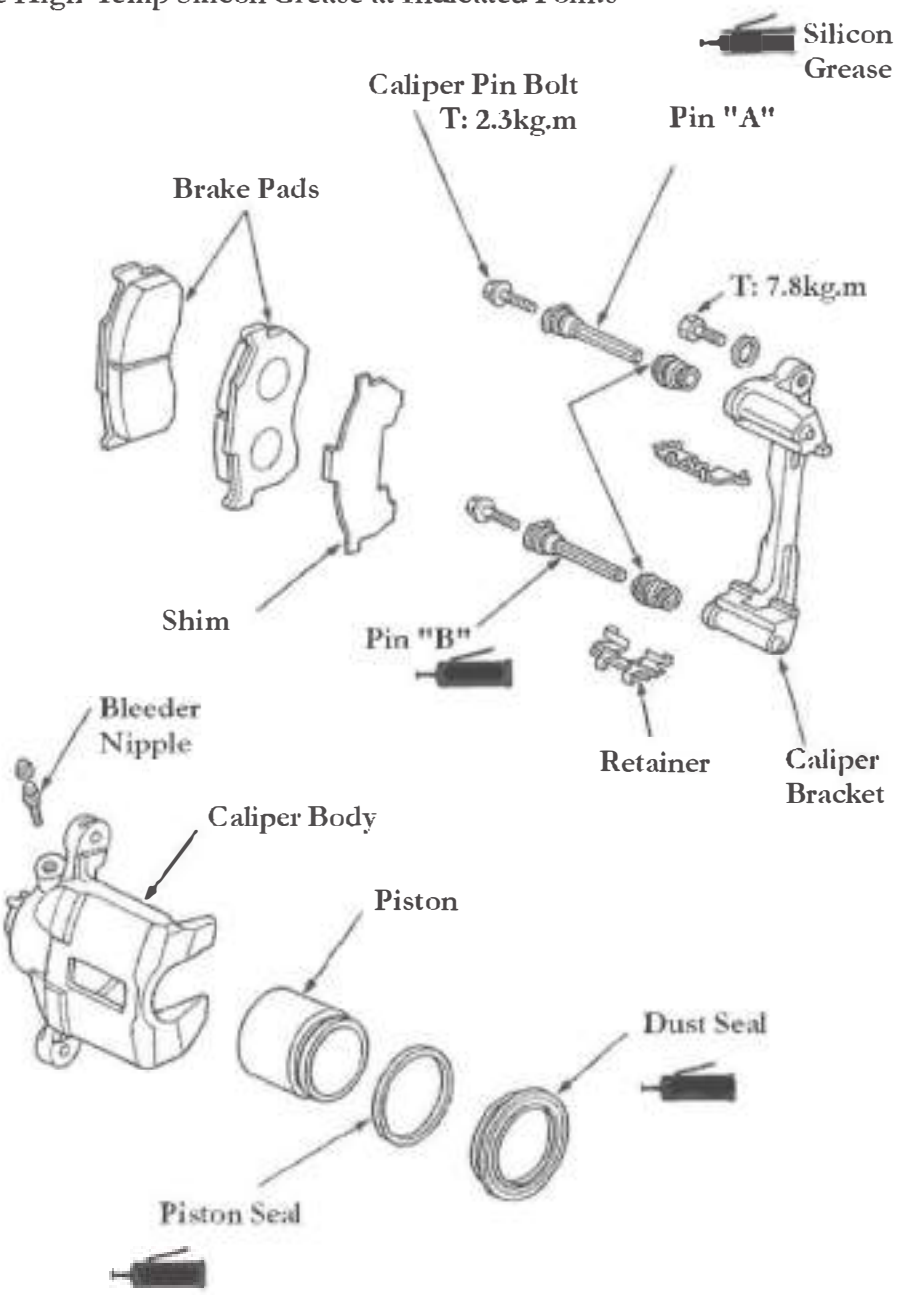
System Schematic





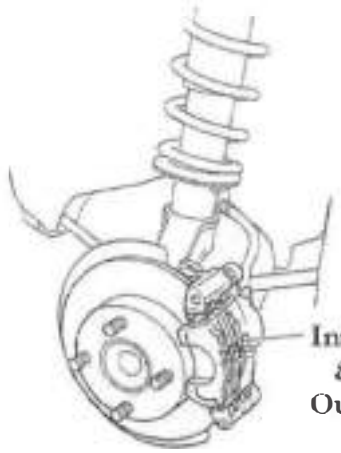
Note: Detailed Information on Each System Following Pages

Note: Use High-Temp Silicon Grease at Indicated Points

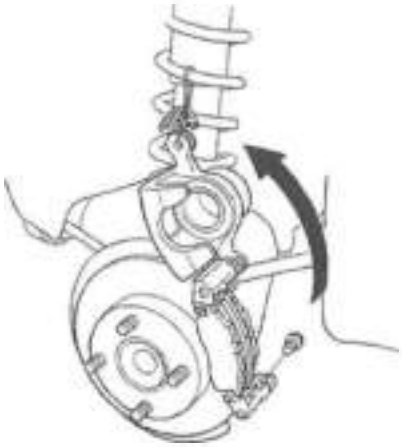


Front Brake Pad Replacement

1. Jack Up Vehicle and Remove Tire(s)
2. Remove Caliper Pin Bolt (Remove-Both Pins if Complete Disassebly)

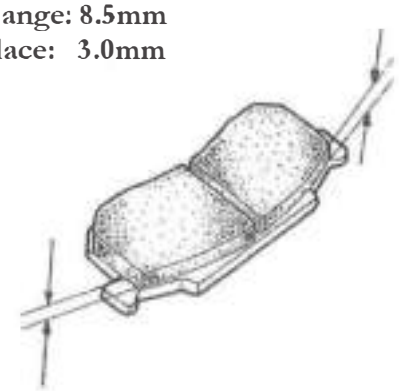


3. Swing Up Caliper and Use Tie Straps To Hold in Place



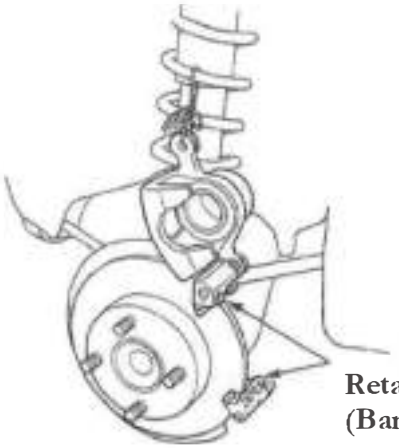
4. Measure Pad Thickness as Shown in diagram Below

In Range: 8.5mm
Replace: 3.0mm

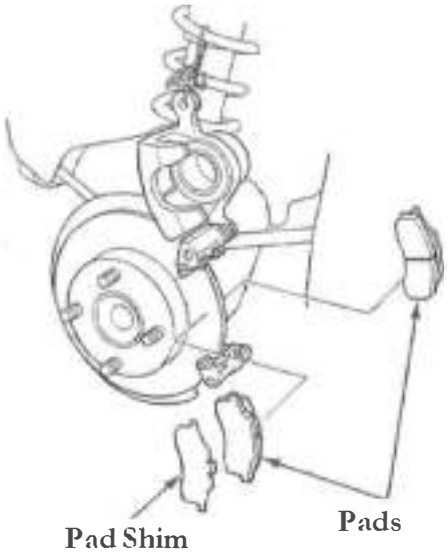


Note: Rounded Edges or Chips Replace (Oil Soaked Must Be Replaced)

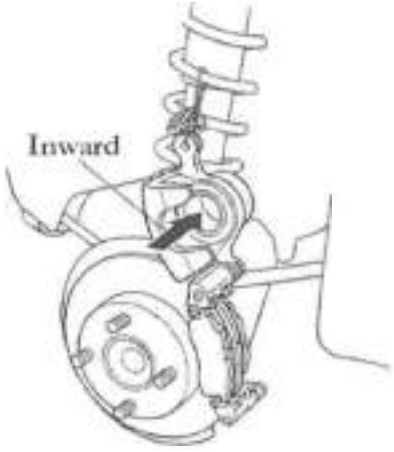
5. Remove Retainer Clip and Clean All Areas With Proper Brake Cleaner



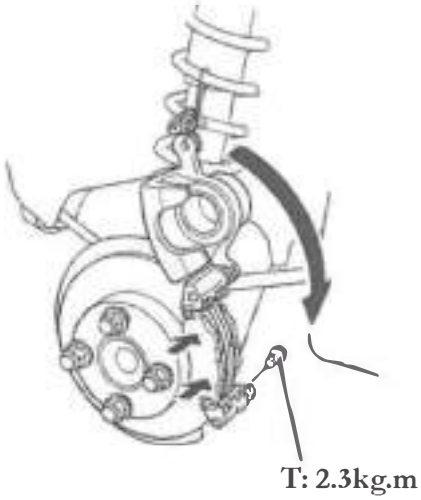
6. Place Pads In Retaining Braket
Note: Pads Facing Disk Face



7. Remove Brake Oil Tank Cover
8. Use Hand or C-Clamp To Push Back Piston

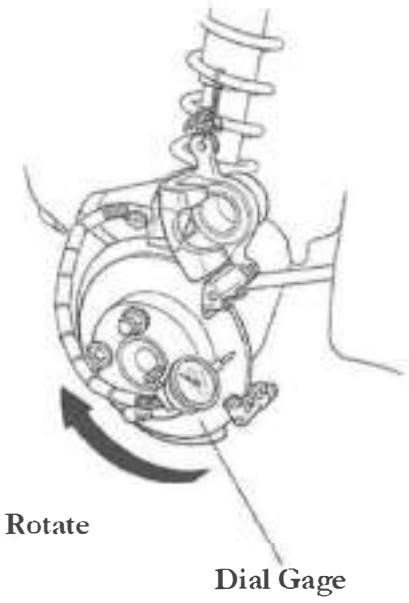


9. Close Caliper and Attach Pin and Bolt
Note: Make Sure No Grease is on Disk Facing



10. After Both Sides Have Been Changed Check Brake Fluid Reservoir. If Low Add DOT3 or DOT4 Approved Fluid

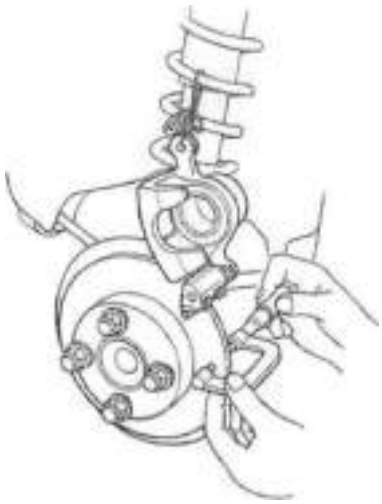
11. Pump Brake Pedal Until Hard
12. Attach Wheel, Lower Vehicle and Test Drive



Remove Tire & Brake Caliper

Attach Dial Gage and Check Round Out

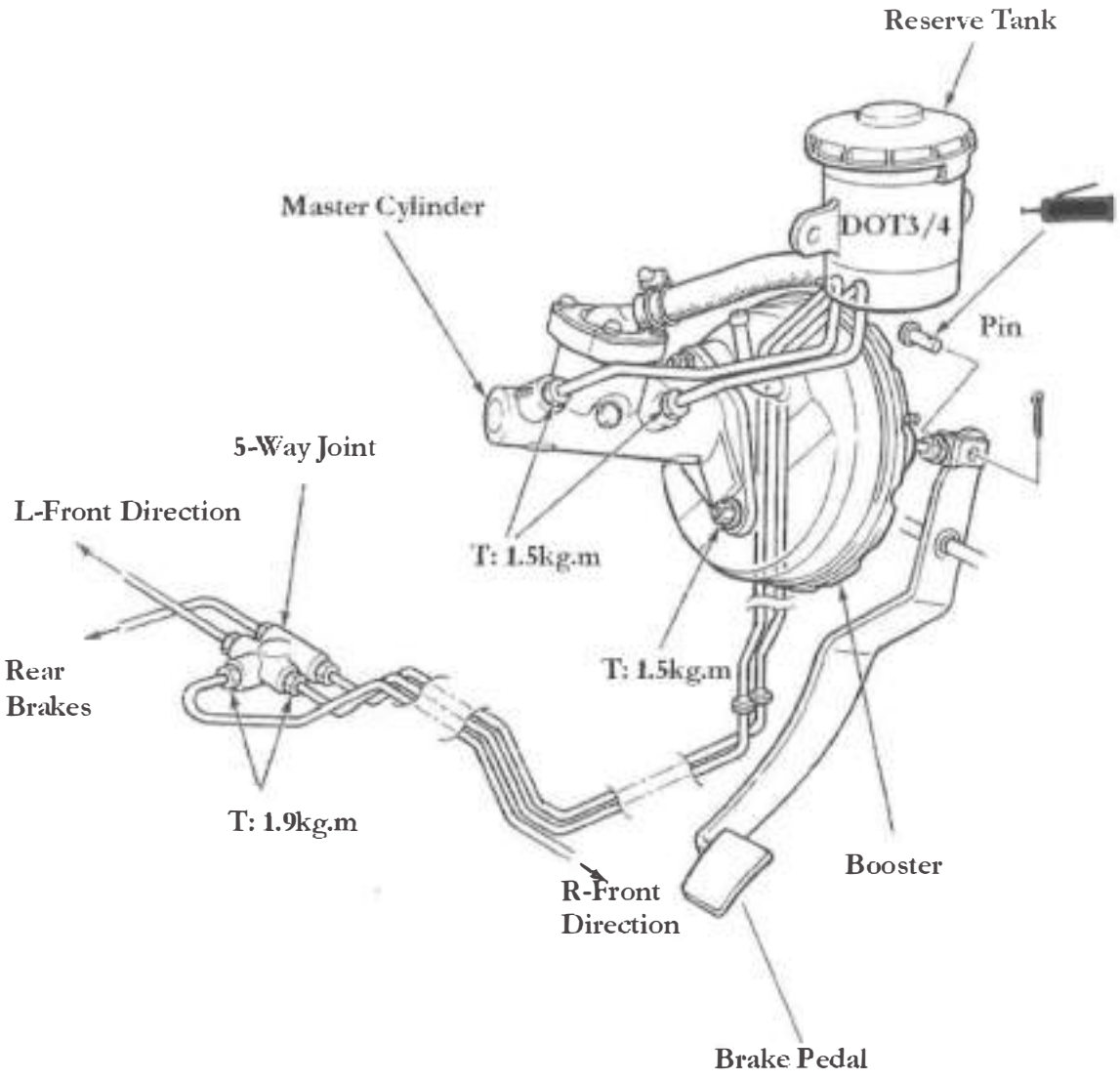
Limit: 0.1mm
Over: Turn Disk or Replace



Disk Thickness Inspection

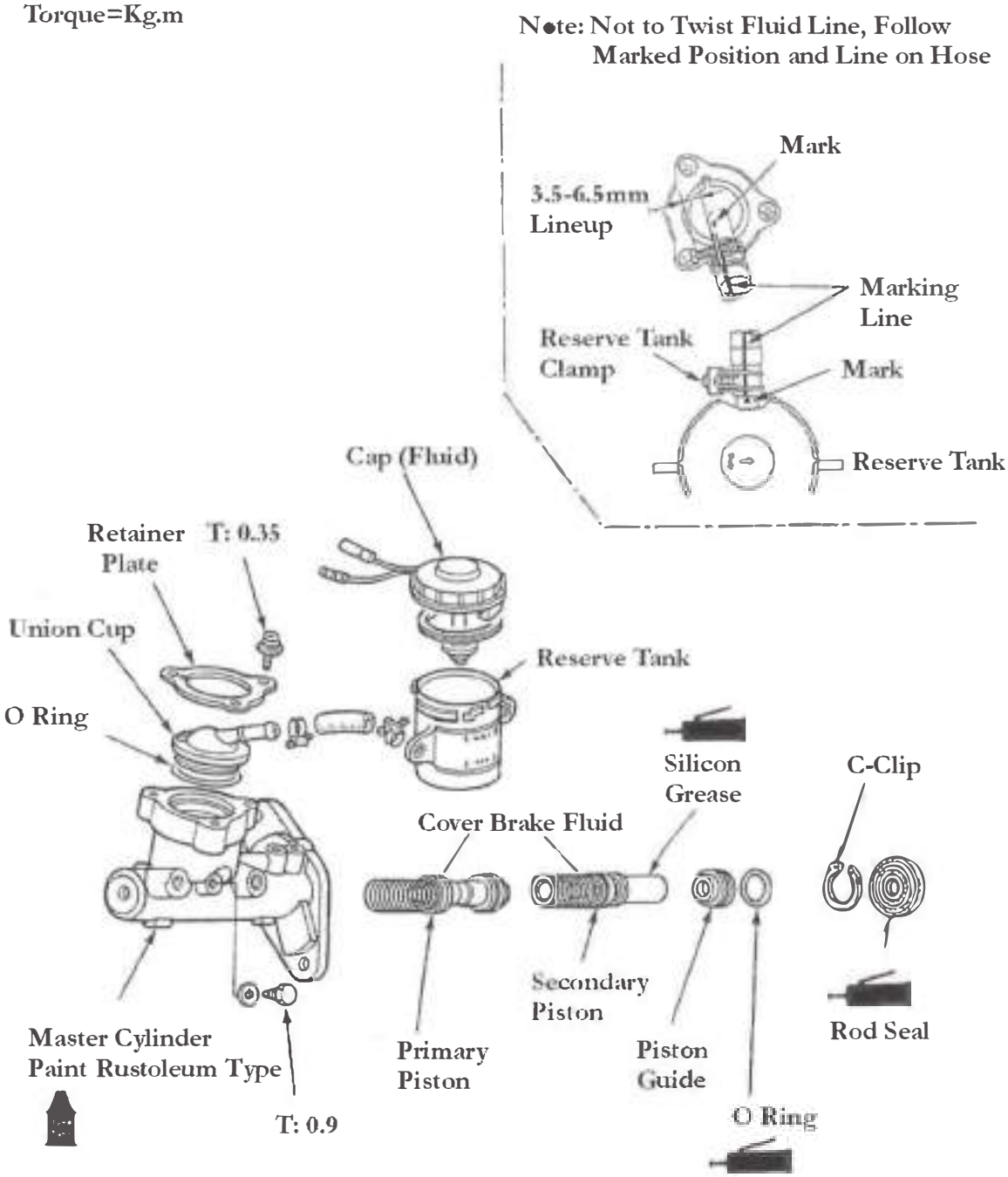
Normal: 12.0mm
Limit: (Include Turn) 10.mm

Turn (Resurface Rate): 0.015mm



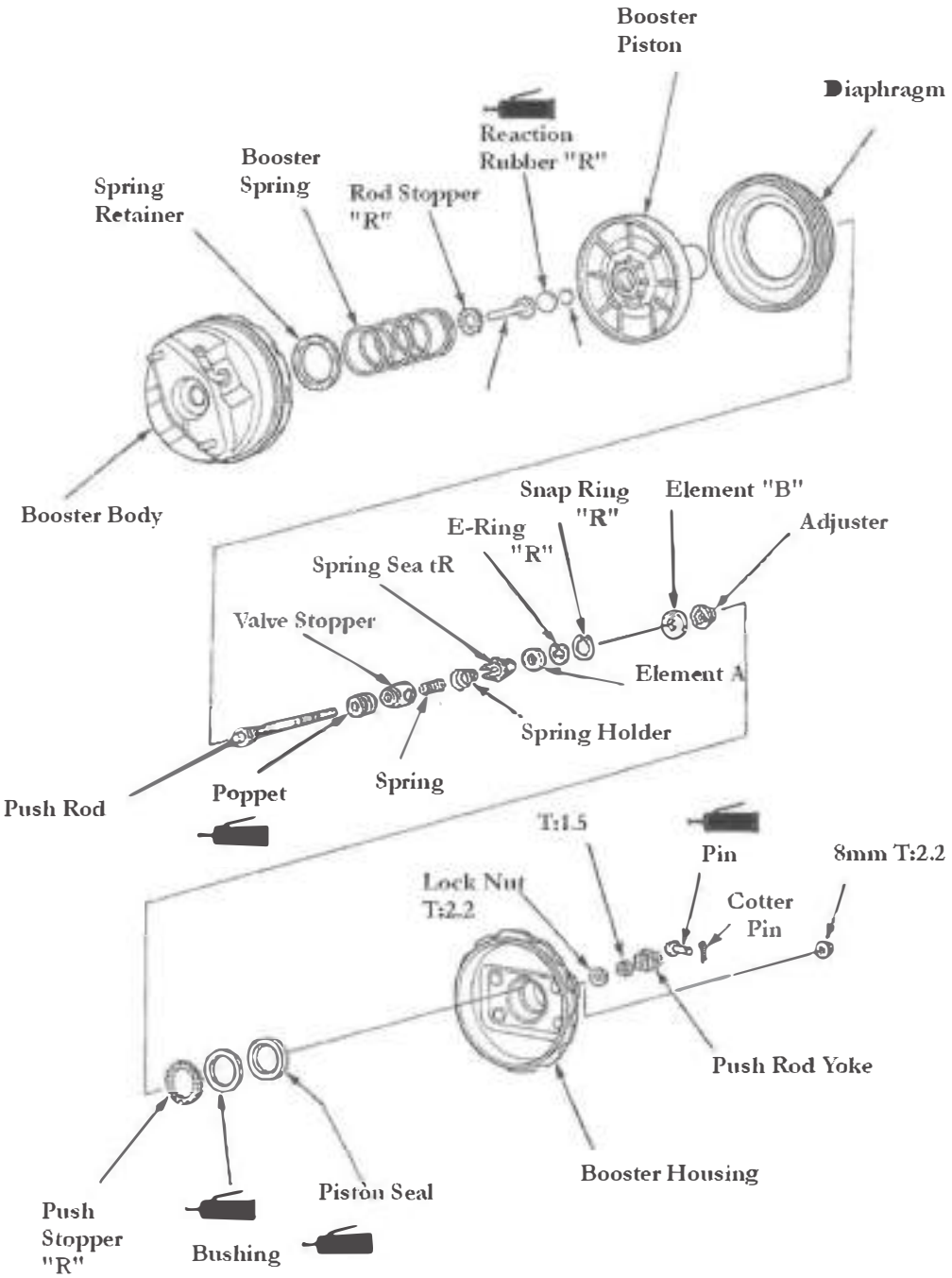
Master Cylinder Components

Torque=Kg.m

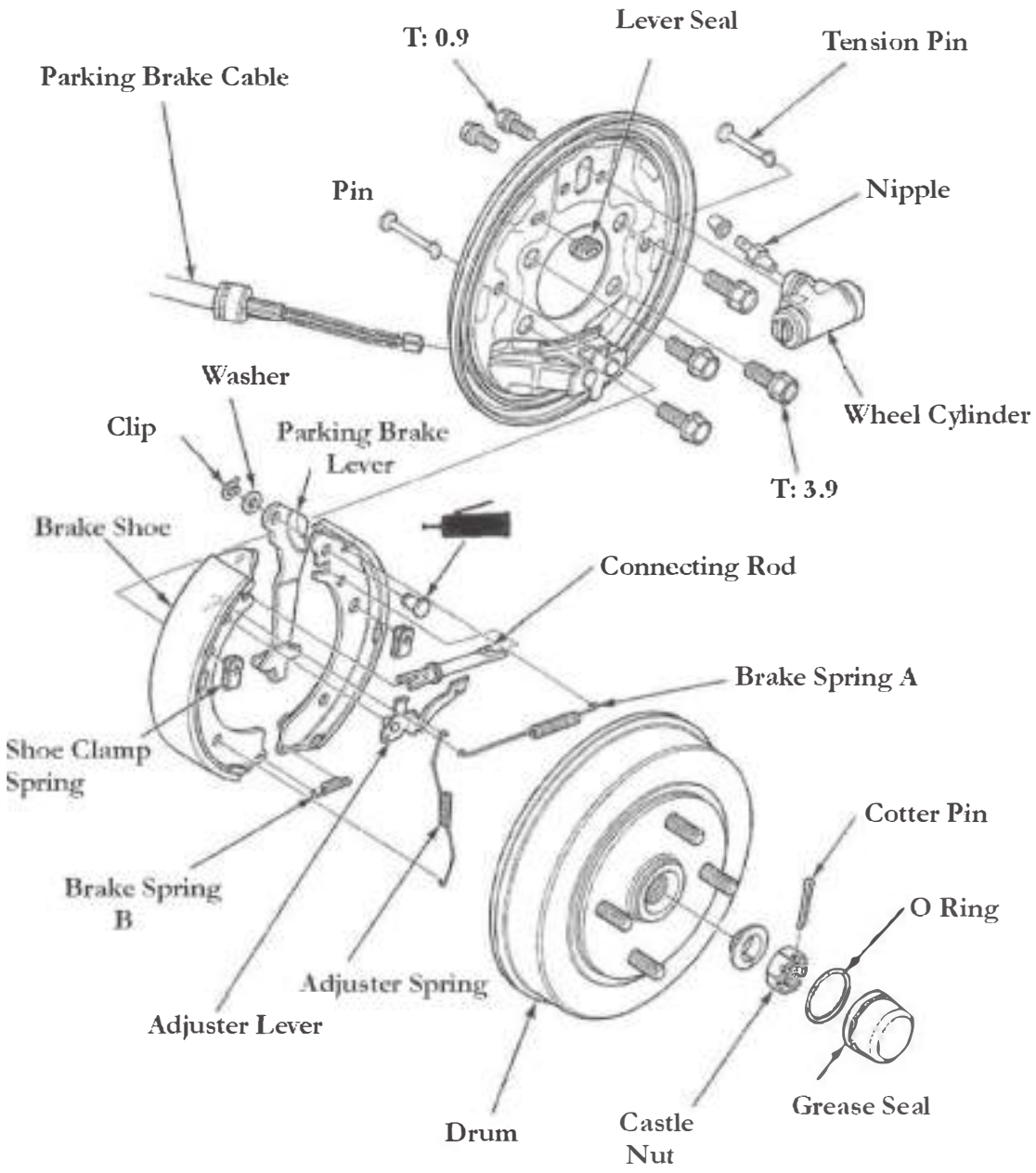


Note: When Paining Plug All Openings

Booster Assembly Components

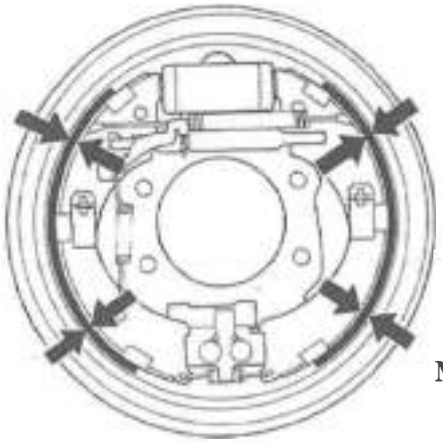


Drum Brake System



Brake Lining Thickness Inspection

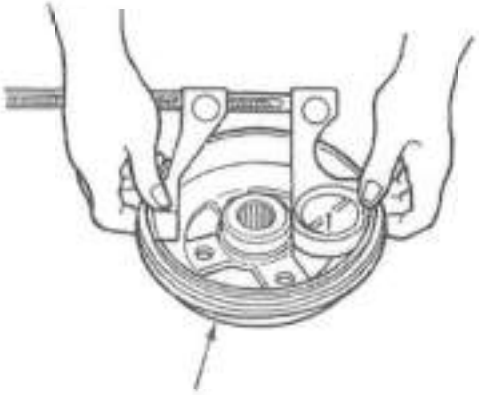
Normal: 4.5mm
Replace: 2.0mm



Measure Points

Drum Round-Out Inspection

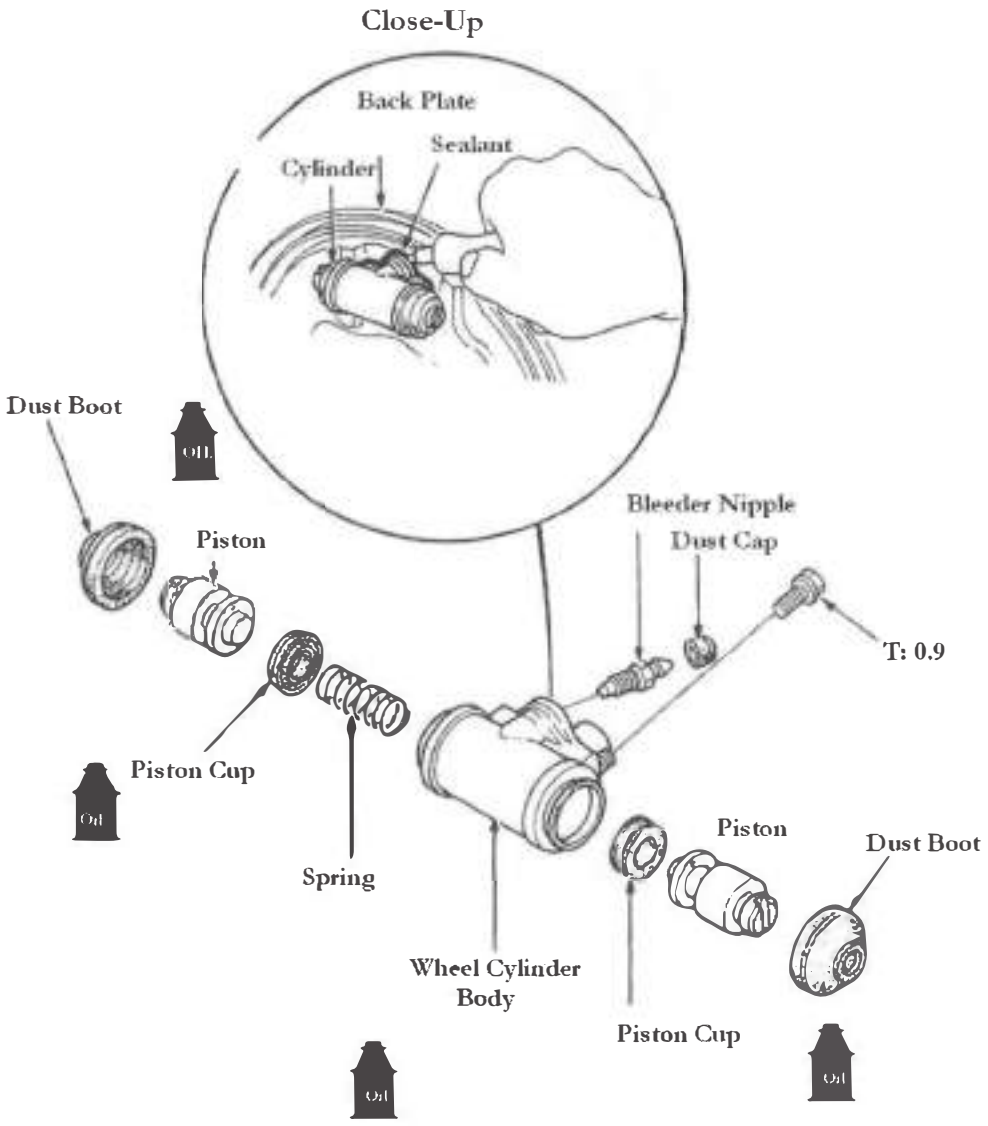
Normal: 200mm
Replace: 201mm



Drum

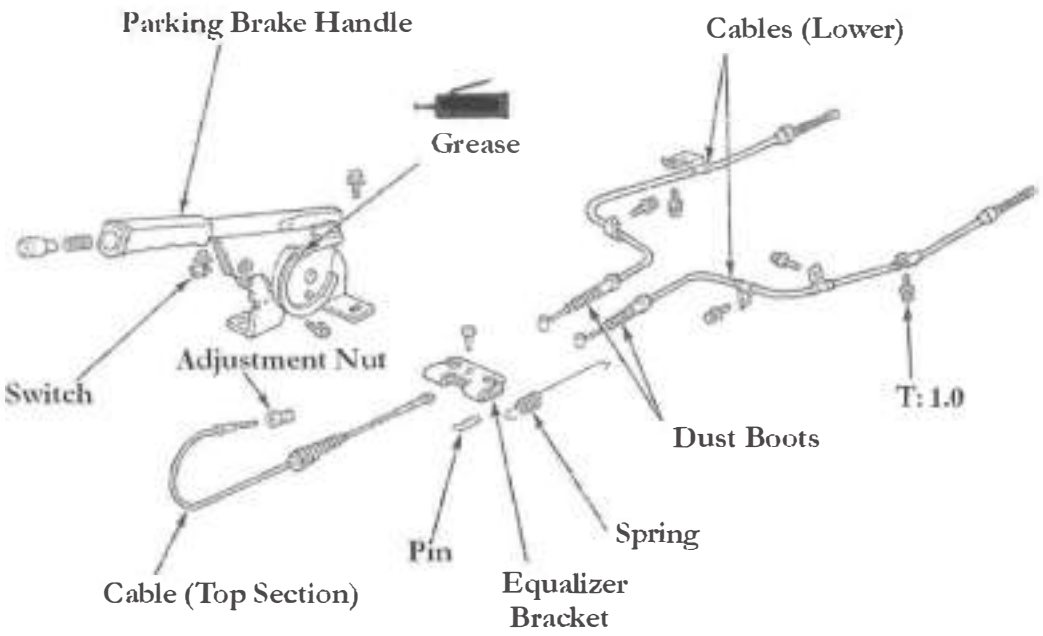
Drum Brake Wheel Cylinder

= Cover With Brake Fluid DOT3 or DOT4

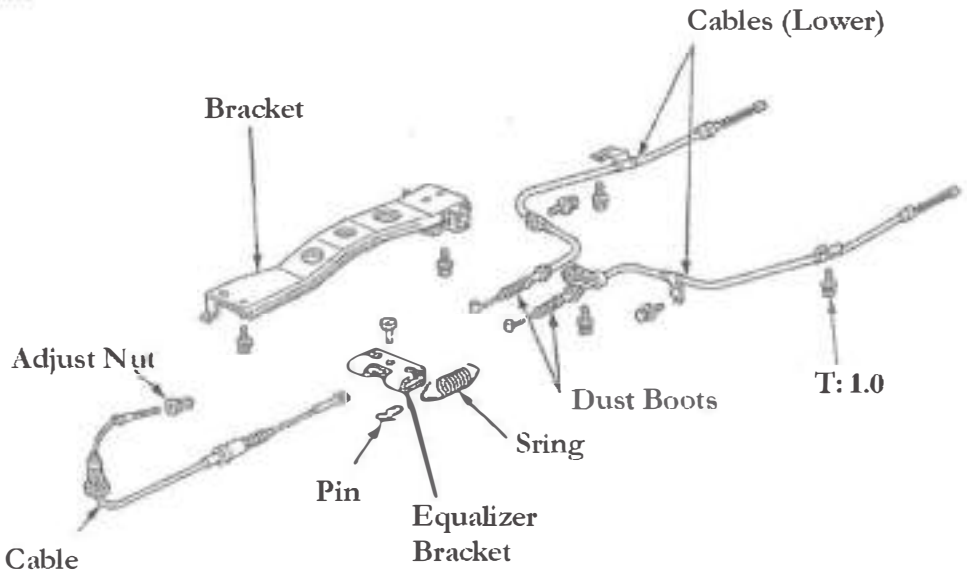


Parking Brake Handle & Cable System

Truck



Van



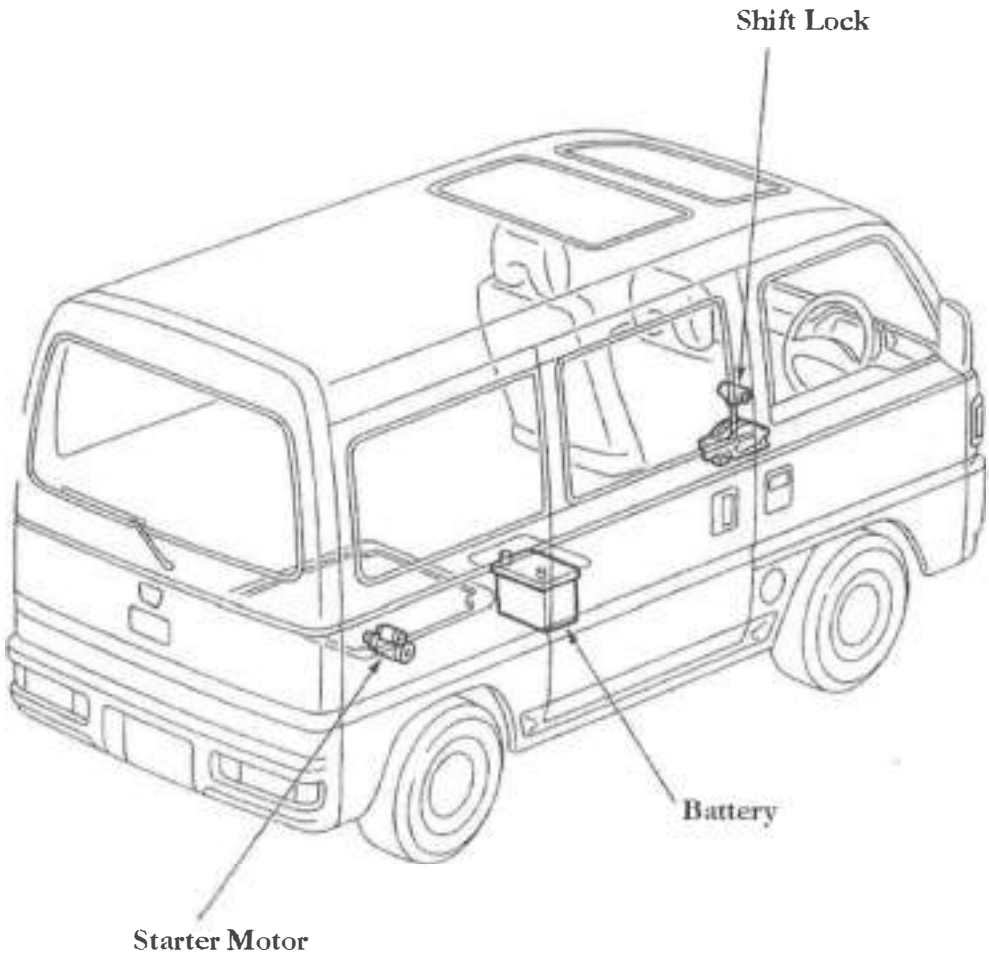
Chapter 11

Starter and Alternator Charging System

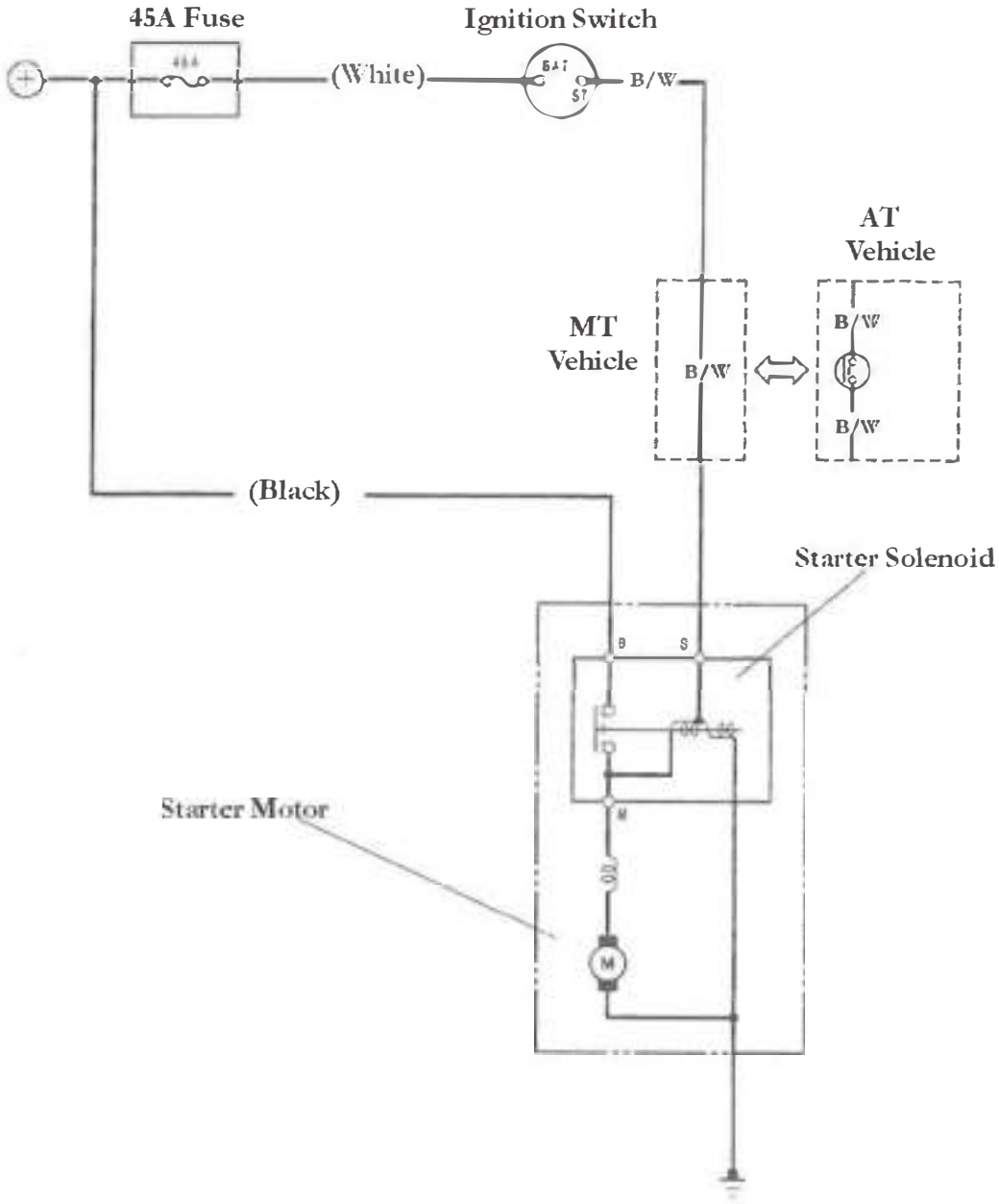
- Starter Circuit Diagram
- Starter Terminal Identification (ND Nippon Denso & Hitachi)
- Starter Removal
- Starter Complete Schematic (ND Denso 0.6kw)
- Starter Complete Schematic (ND Denso 0.8 &0.9kw Versions)
- Starter Complete Schematic (Hitachi 0.8kw Version)
- Vehicle Diagram
- Charging Circuit Diagram
- Alternator Circuit Test & Unit Removal
- Alternator Parts Schematic
- Rectifier Inspection & Circuit
- Brush Specifications

Starter Location

AT Vehicle

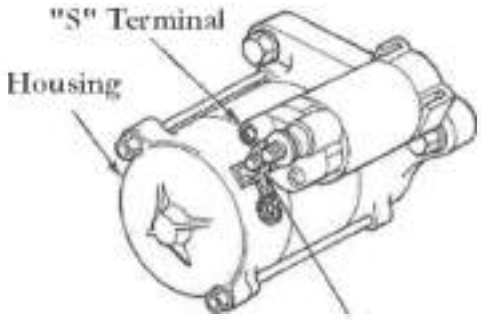


Starter Motor Circuit

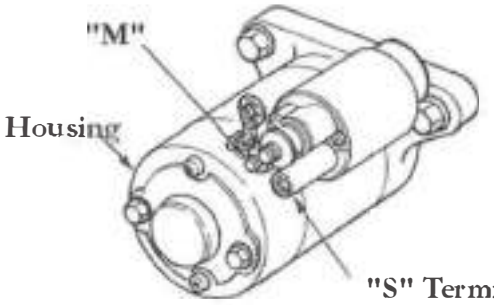


Starter Terminals and Removal

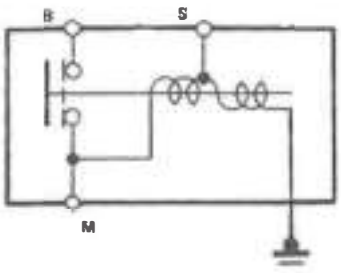
ND Version
(Nippon Denso)



Hitachi Version

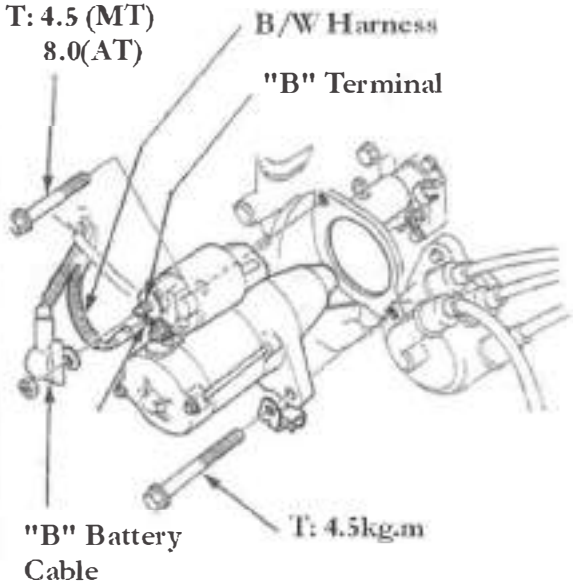


Solenoid Circuit



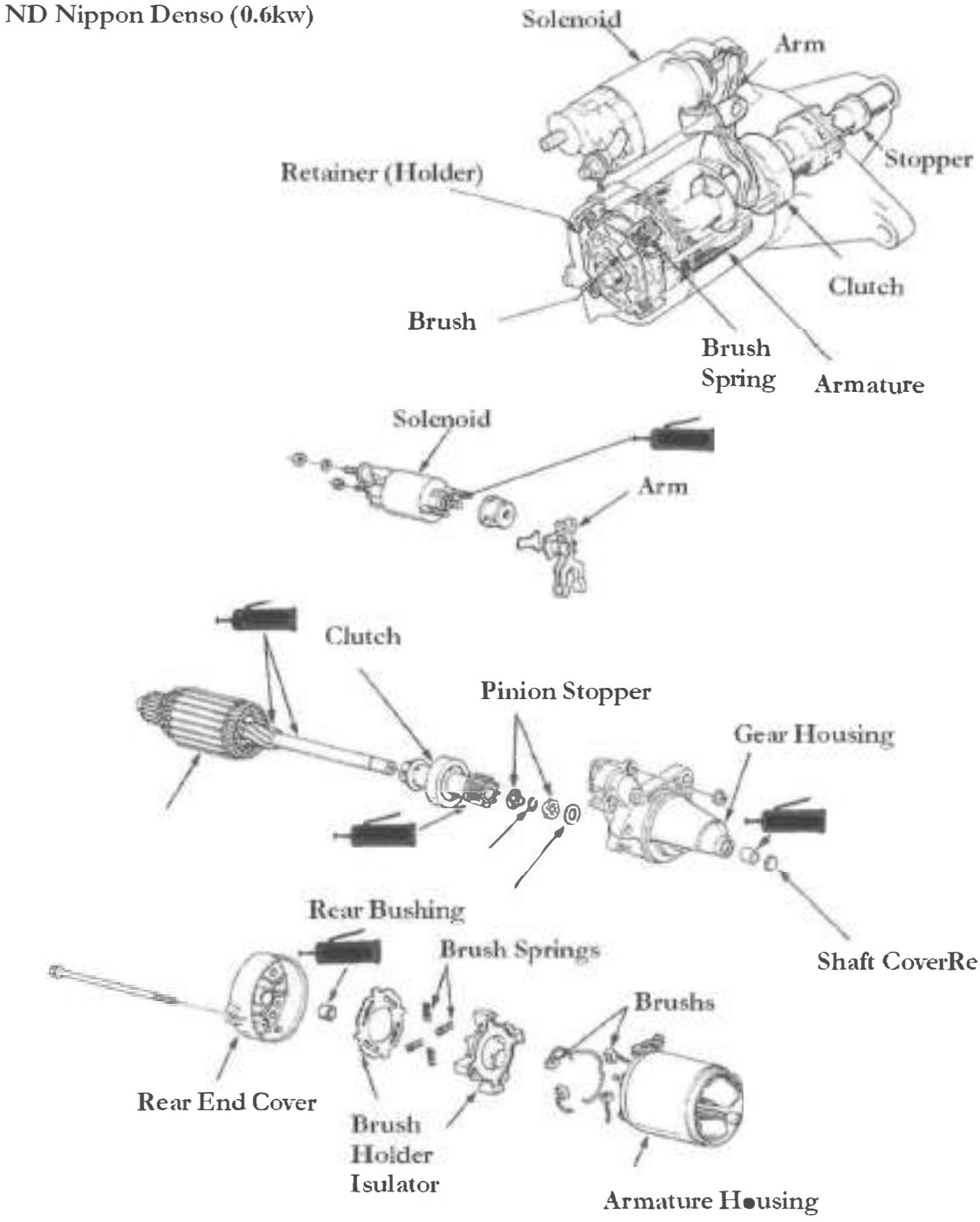
Starter Removal

1. Disconnect Battery Terminals
2. Remove "B" Terminal
3. Disconnect "S"Terminal
4. Remove Attachment Bolts and Slide Starter Out

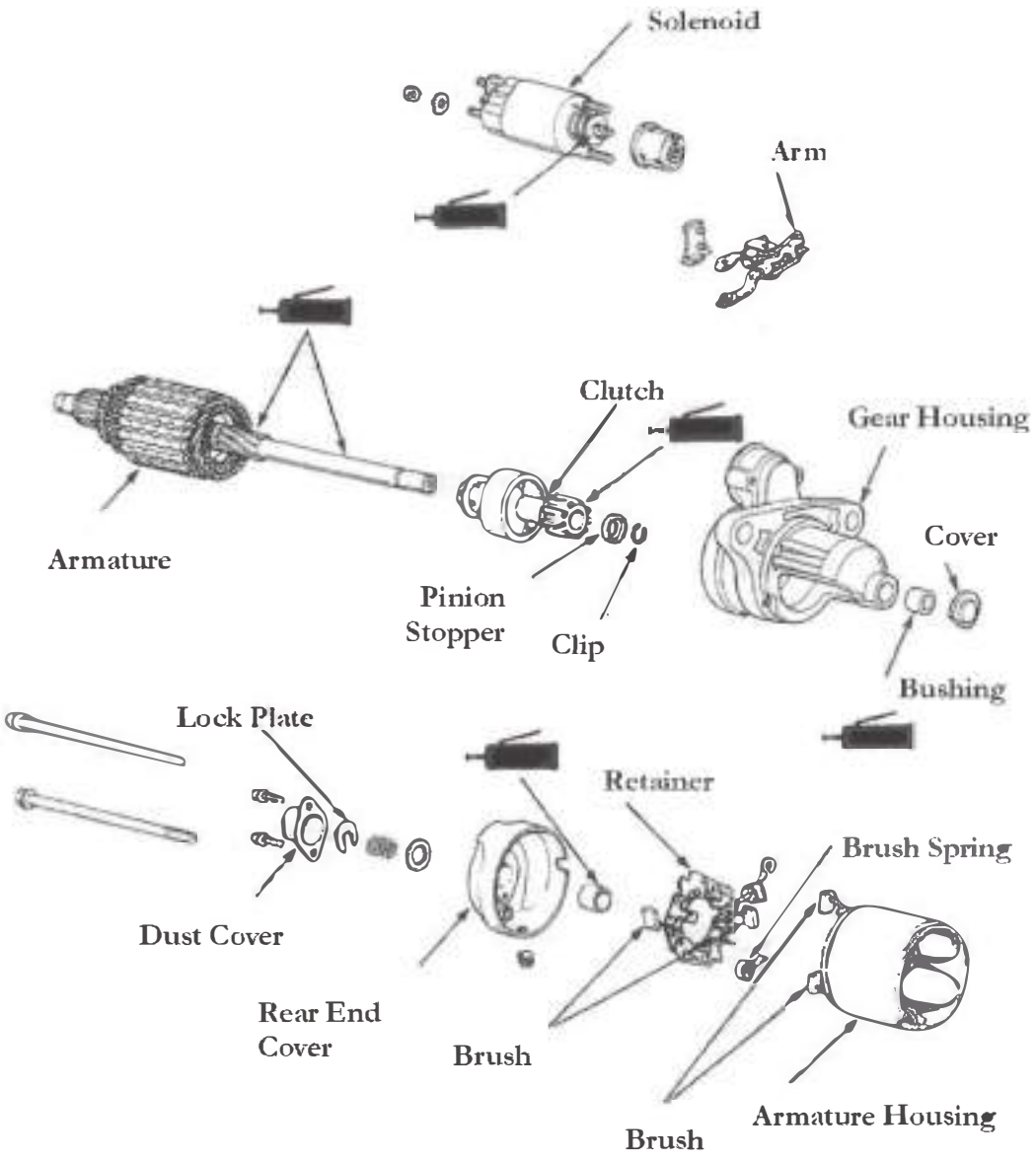


Starter Parts Schematic ND Nippon Denso

ND Nippon Denso (0.6kw)

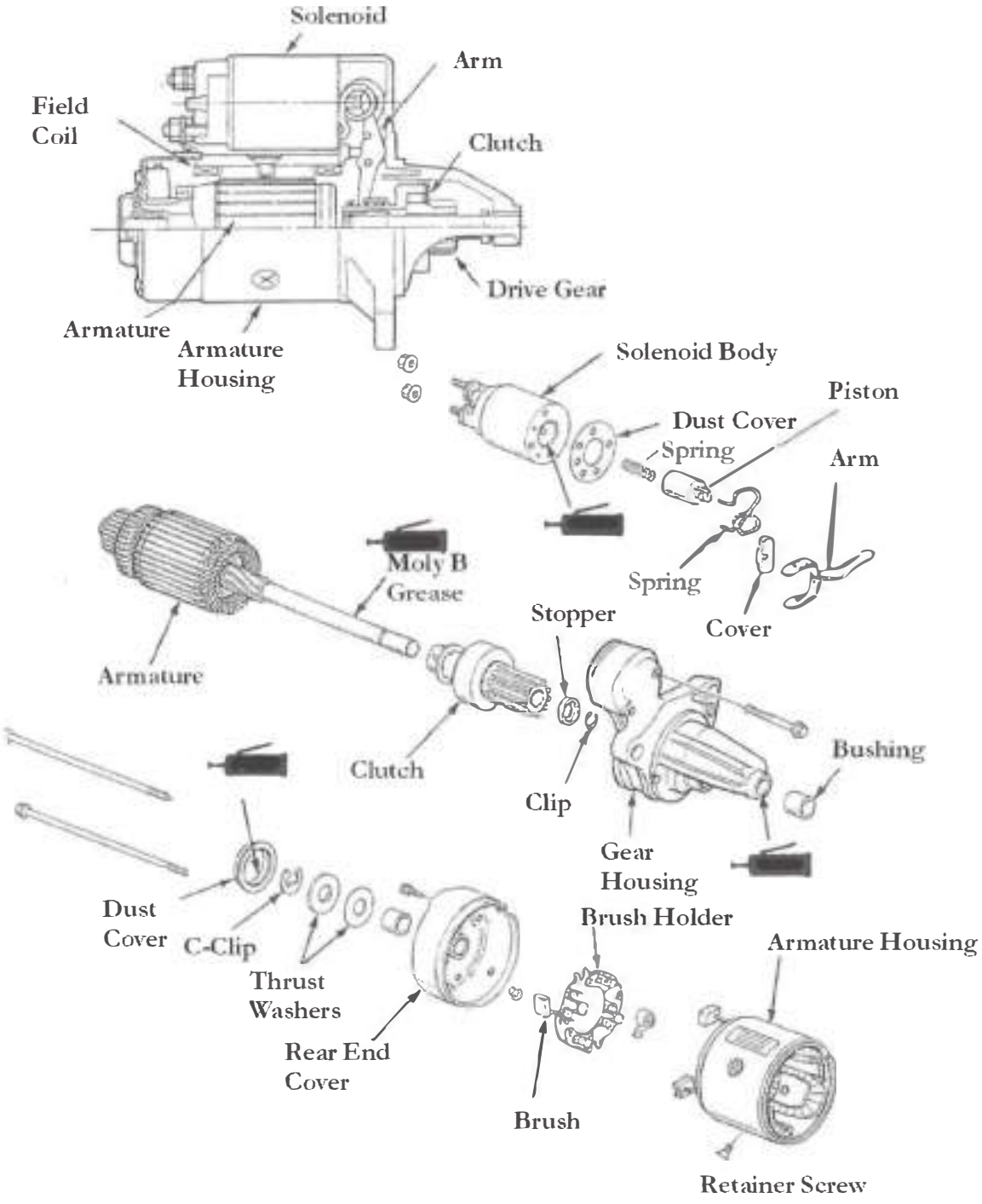


Starter Parts Schematic ND 0.8 & 0.9kw Versions

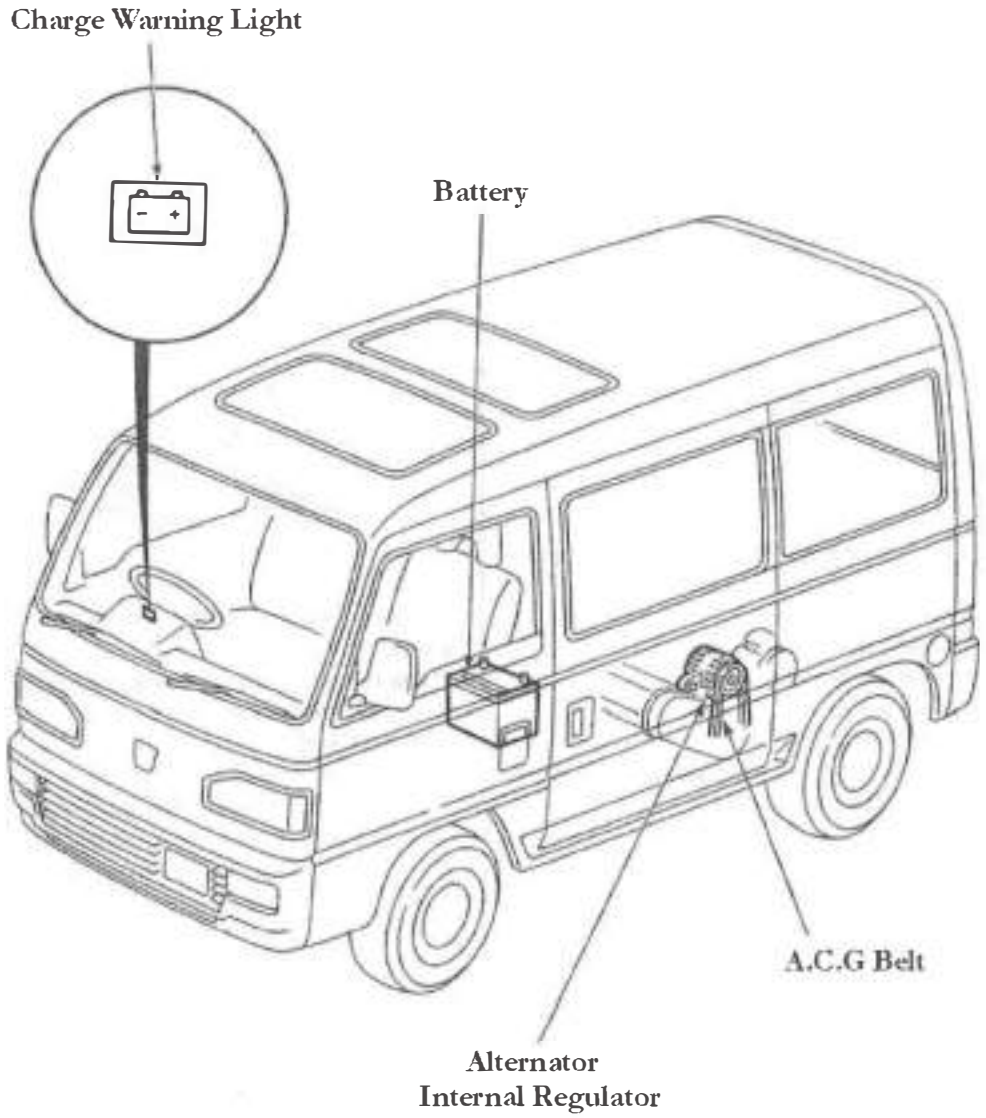


Starter Parts Schematic Hitachi 0.8kw

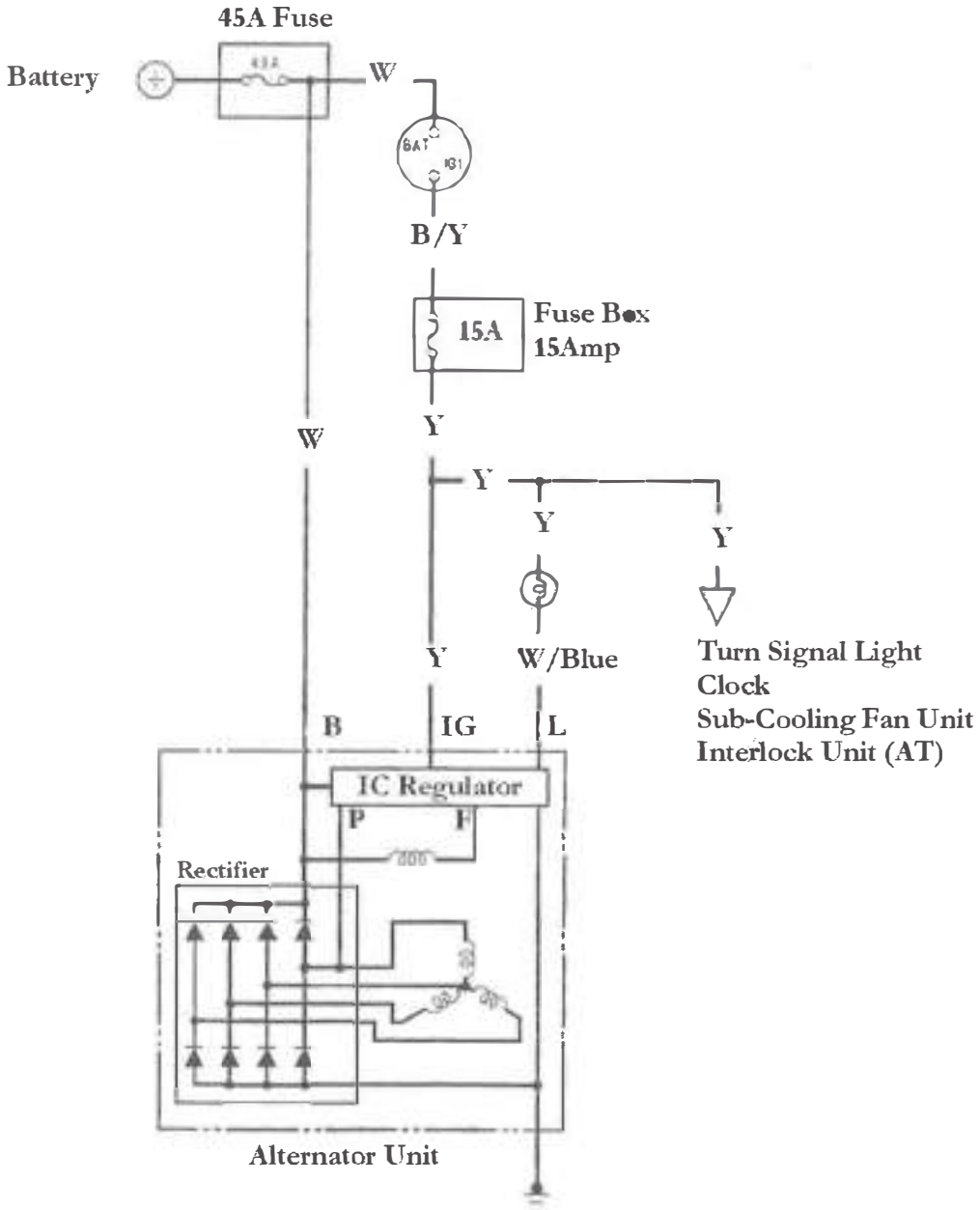
Hitachi 0.8kw



Alternator Location



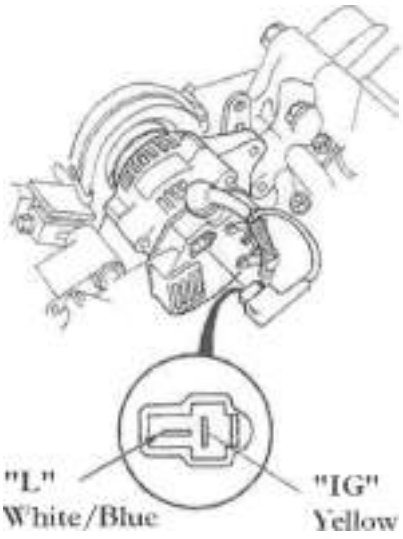
Charging Circuit



Alternator Removal

Circuit Test

1. Turn Ignition Switch to ON Position. Check to Dash to See Warning Lamp is ON. Light is OFF Check Alternator Regulator

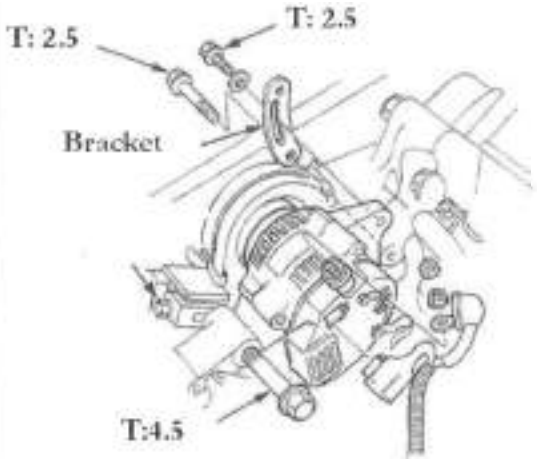


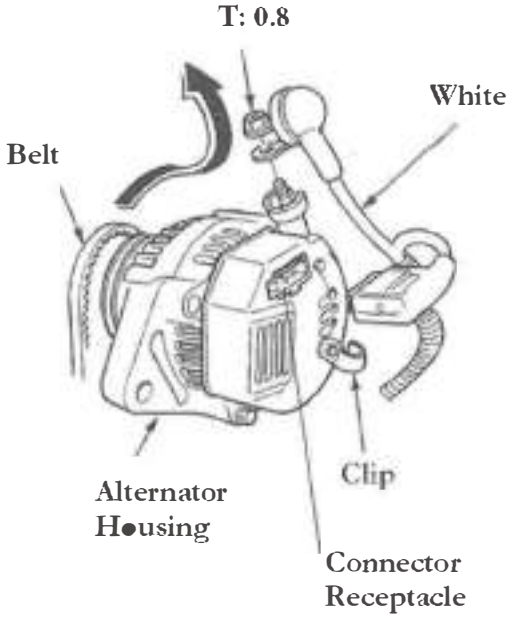
Note: Related Items
Warning Light Bulb 1.4W
Fuse: Turn Signal Fuse 15A

Check Circuit For Dead Paths
(Previous Page)

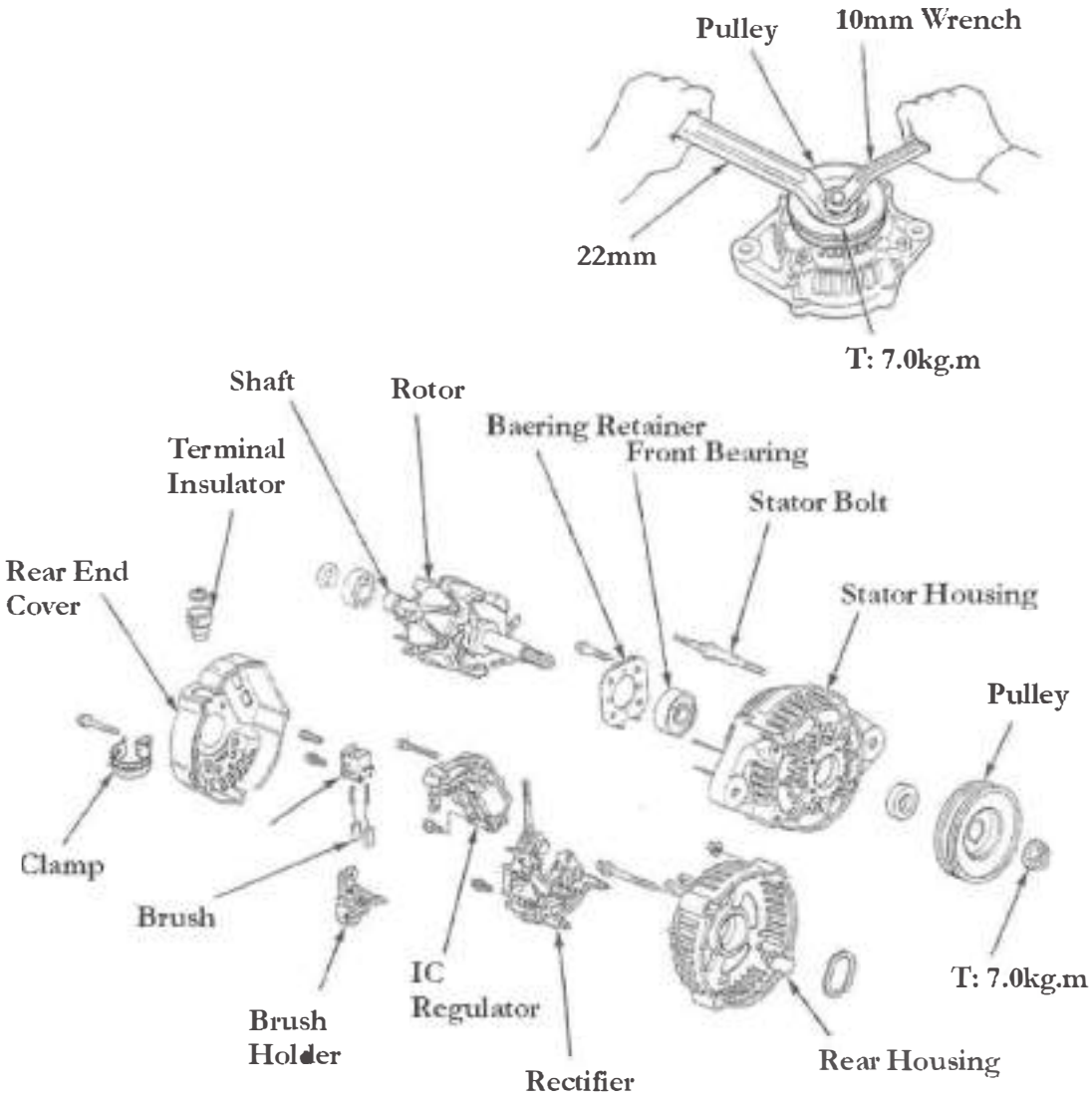
Alternator Removal

1. Diconnect Barrty Terminals
2. Disconnect Alternator Electrical Connections
3. Loosen Retaining Bolts and Slide Off A.C.G Belt
4. Remove Retaining Bolts and Remove Alternator





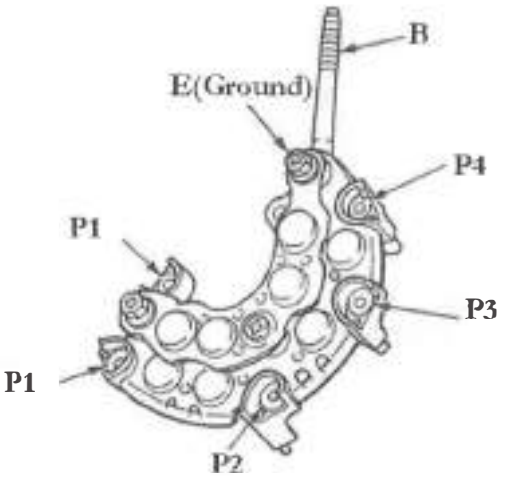
Alternator Parts Schematic



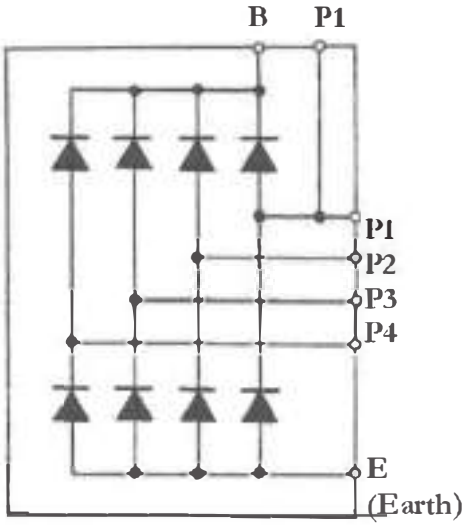
Note: Specifications See Service Data Section

Rectifier & Brush Inspection

Rectifier Inspection

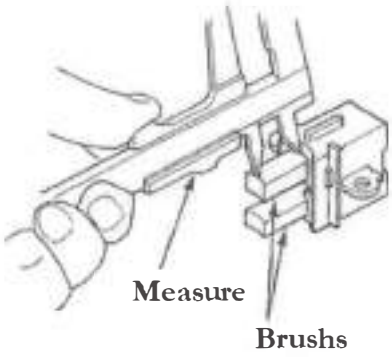


Circuit

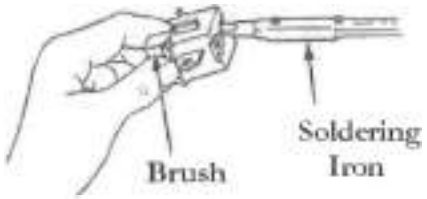


Brush Measurement

New: 10.5mm
Replace: 4.5mm



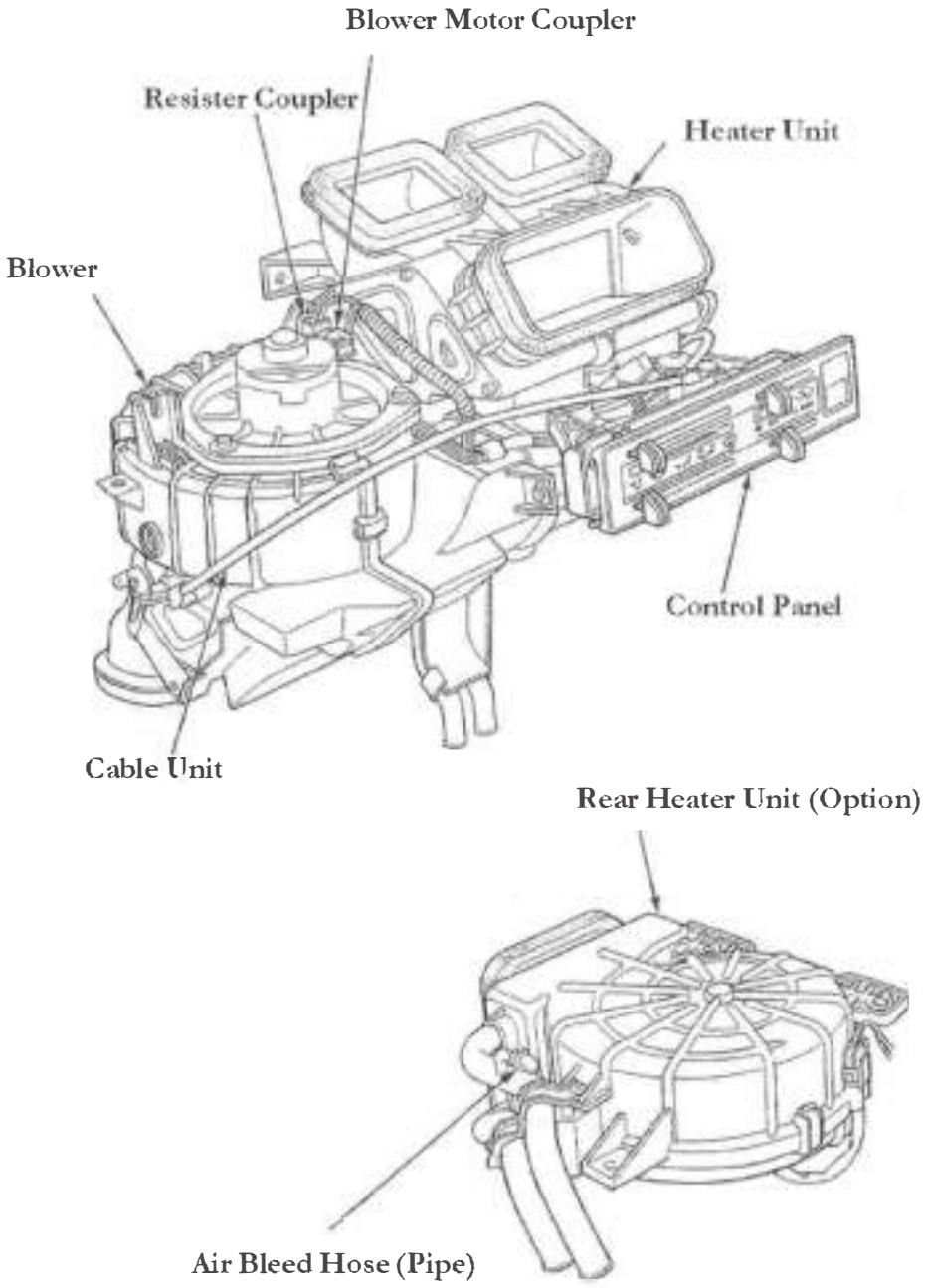
Note: Use Soldering Iron to Change Brush(S)



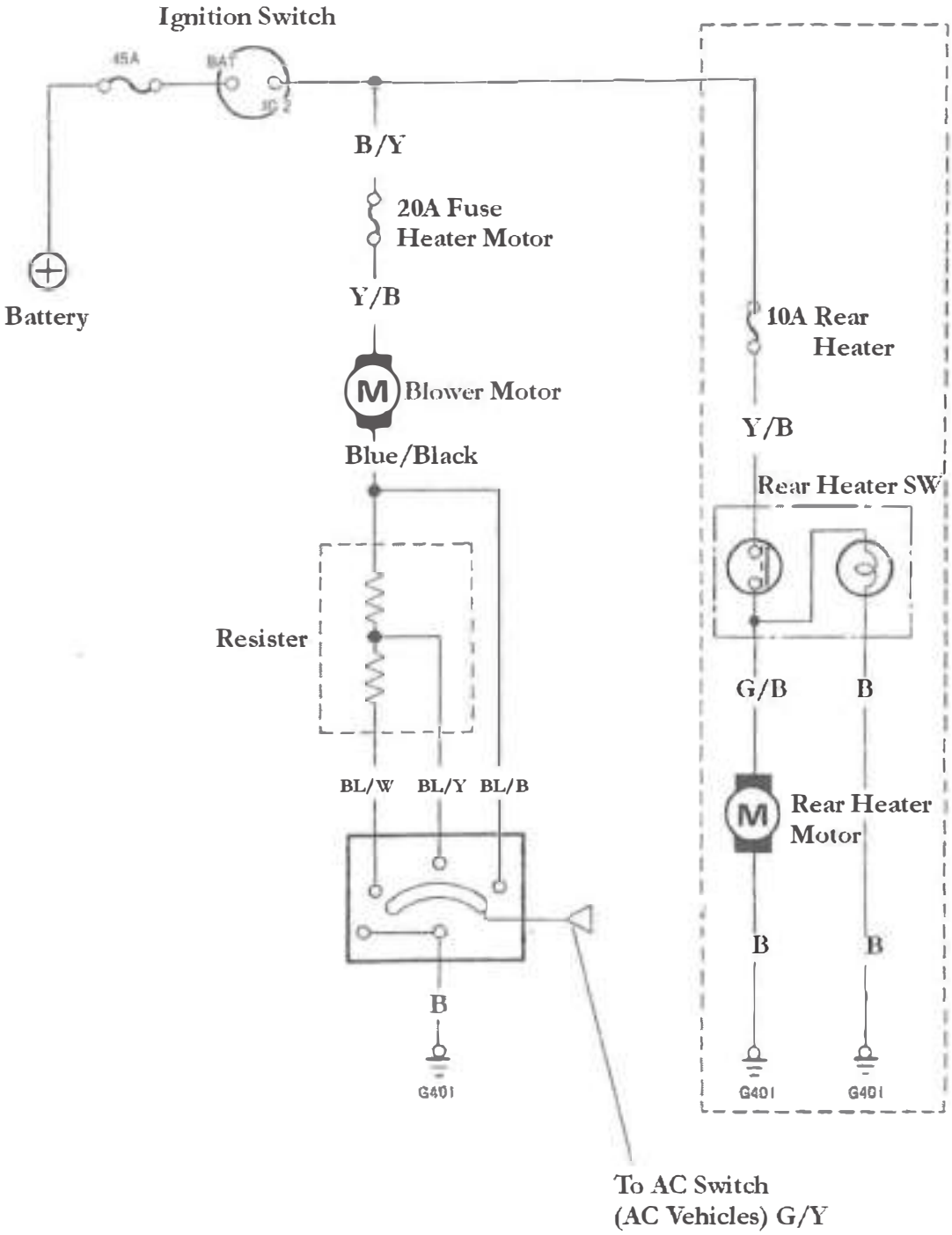
Chapter 12

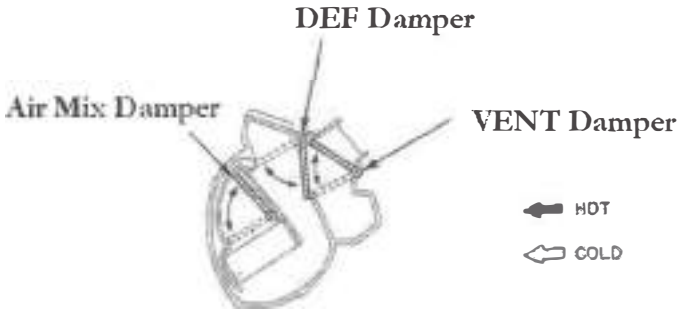
Heater & Air-conditioning

- Front and Rear Heater Unit Components
- Heater Control Circuit Diagram
- Heater and Damper Valve Position
- Front Blower Fan Removal
- Front Blower Assembly Breakdown
- Heater Unit Schematic and Heater Core
- Rear Heater Components (Optional Rear Heater)
- Heater Fan Switch(s) Pin Contacts & Positions
- A/C System Schematic (Truck)
- A/C System Schematic (Van Type 1)
- A/C System Schematic (Van Type 2)
- A/C Electrical Circuit Diagram
- Condenser Schematic Van
- Condenser Schematic Truck
- Compressor Breakdown



Heater Control Circuit



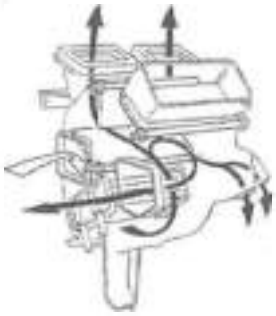
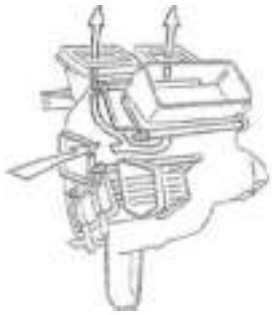


HOT

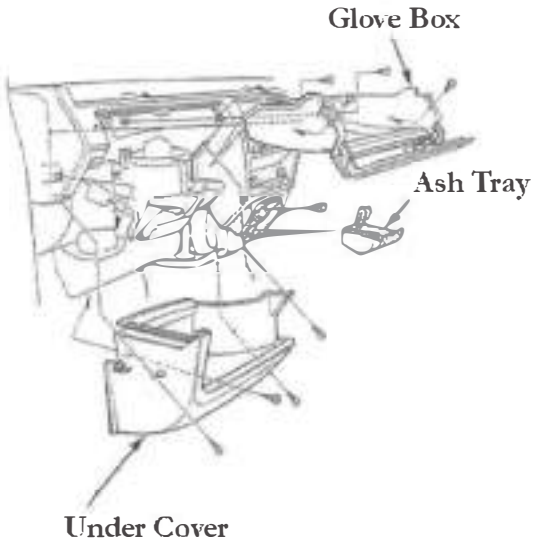
COLD

HOT-COLD

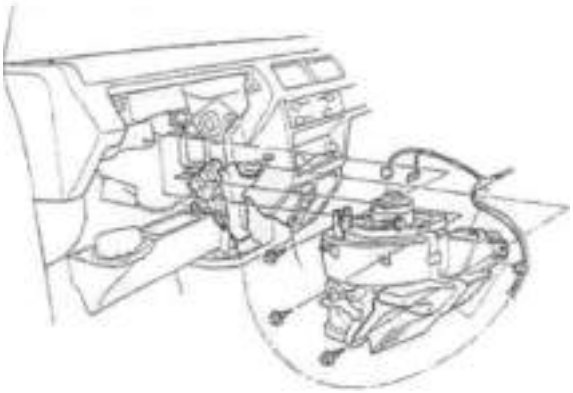
Control Posistions

	HOT	COLD
HEAT		
HEAT/DEF		
DEF		

Blower Fan Removal (Front)



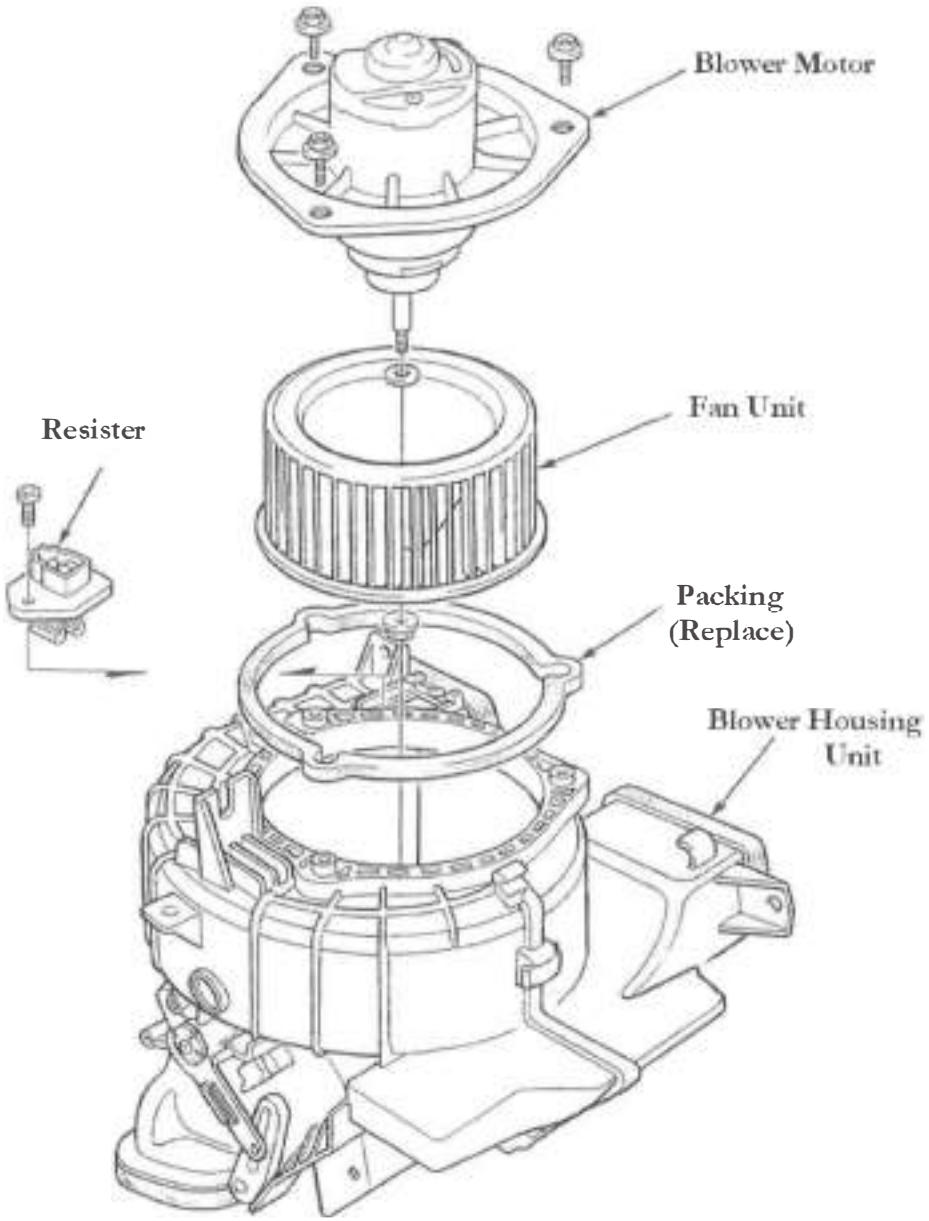
1. Remove Glove Box & Under Cover
2. Slide Out Ash Tray and Remove Bracket
3. Disconnect Control Cable



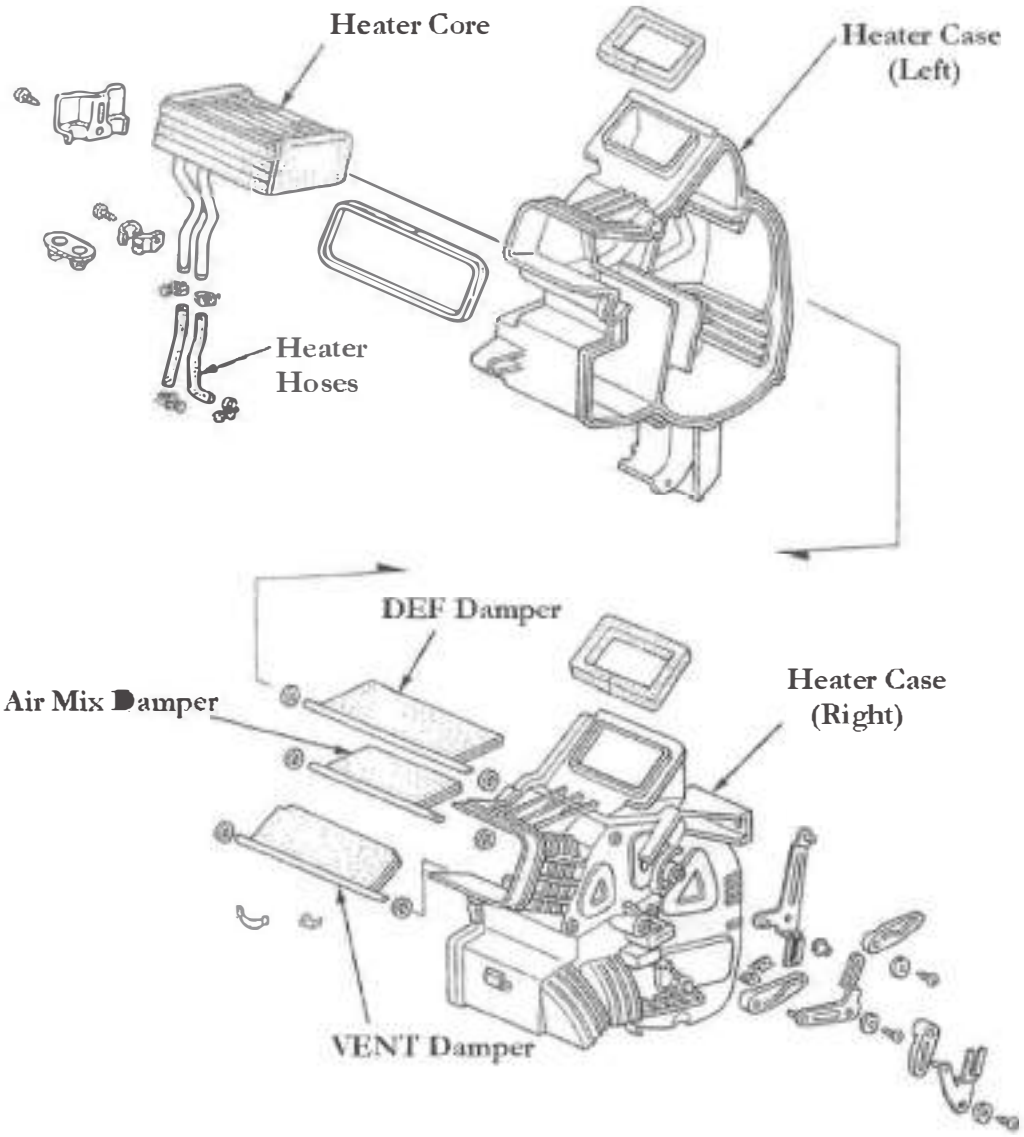
4. Disconnect Blower Motor Coupler & Blower Resister
5. Remove Attachment Screws
6. Remove Blower Unit

Front Blower Motor Schematic

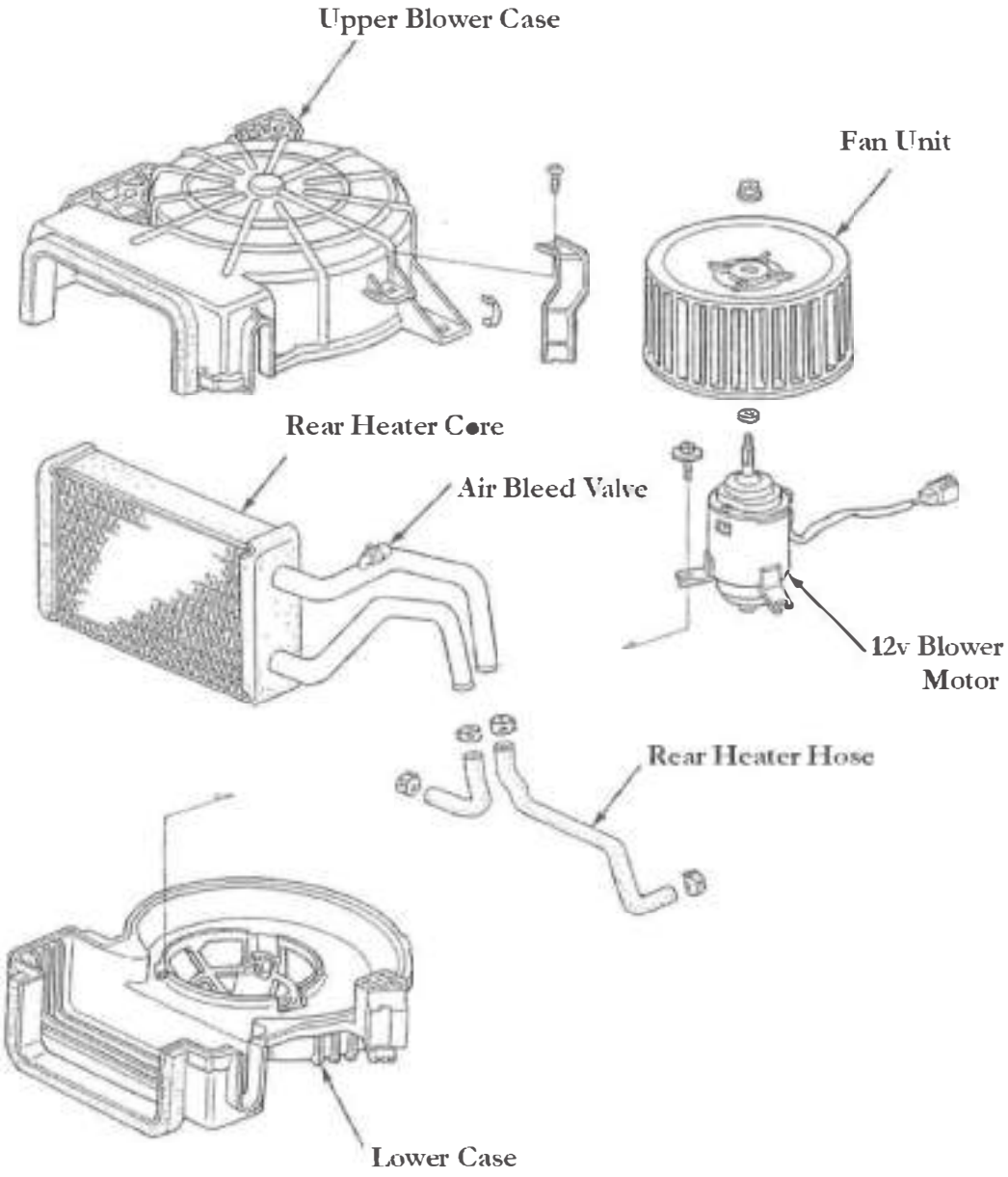
Front Blower Assembly



Heater Unit and Heater Core



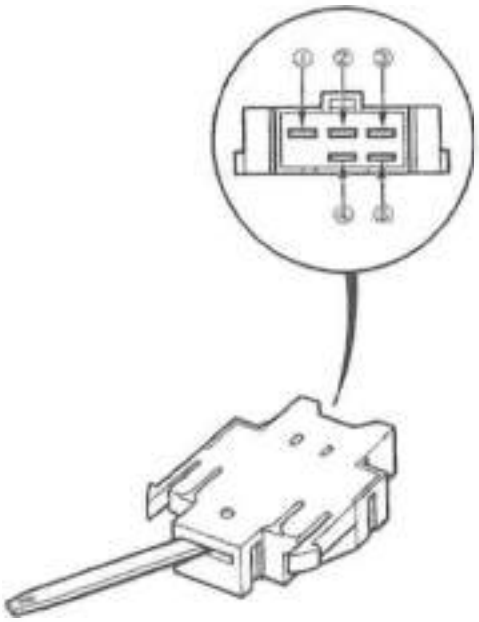
Rear Heater Unit Components



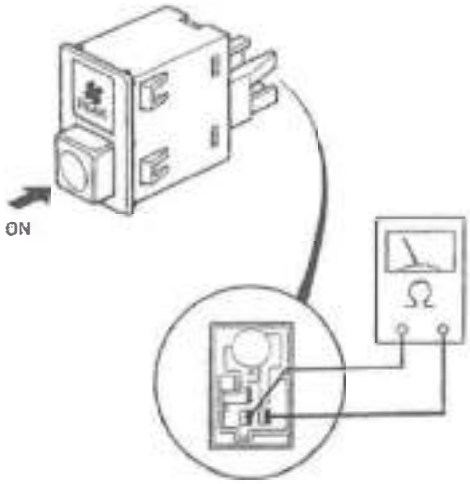
Fan Switches

Pin & Position Contact

Pin # / Position	①	⑤	③	④	②
OFF					
I	○	○	○		
II	○	○		○	
MAX	○	○			○

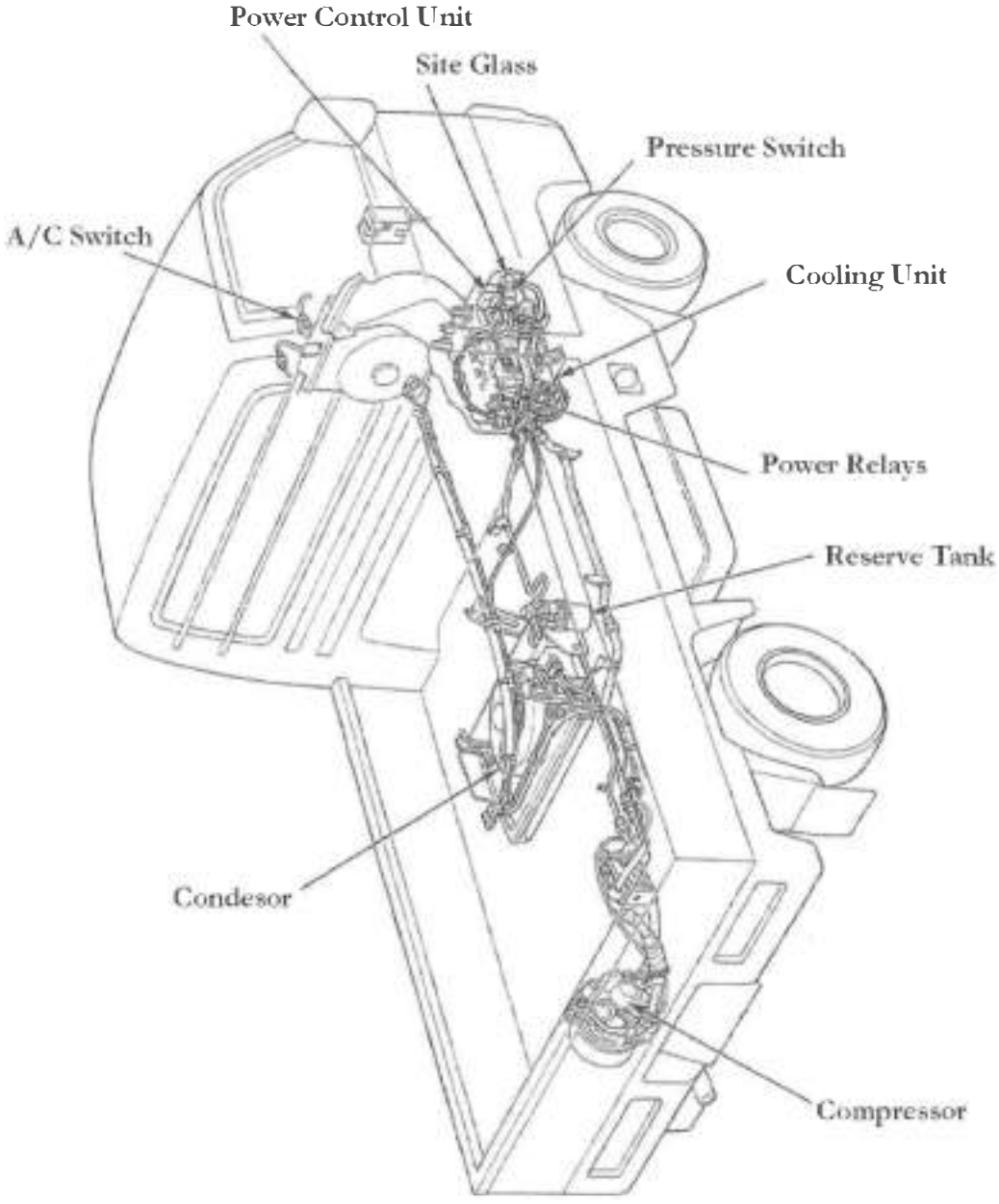


Rear Heater Switch



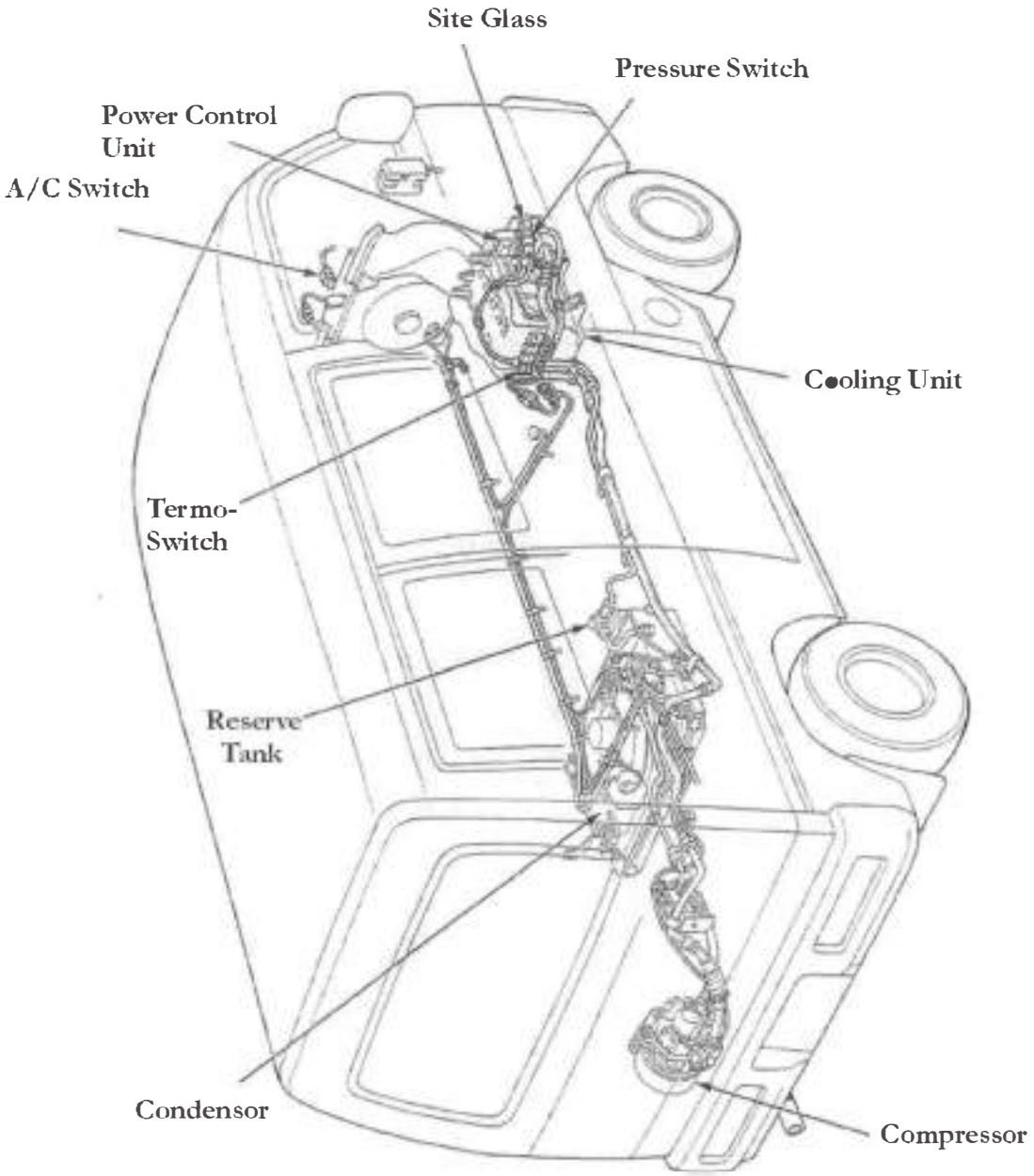
AC Schematic Diagram

Truck



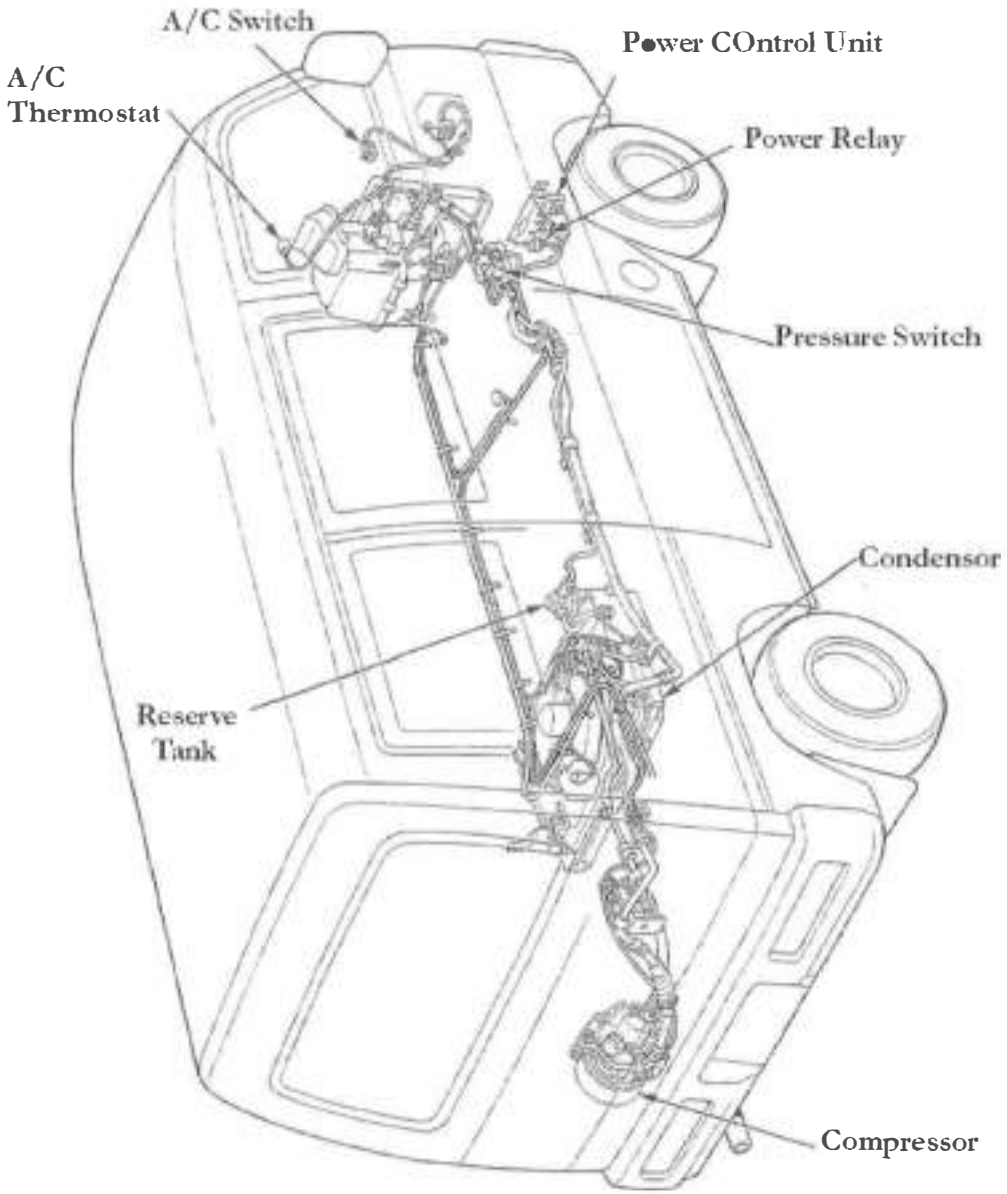
AC Schematic Diagram Van Type 1

Van Type 1

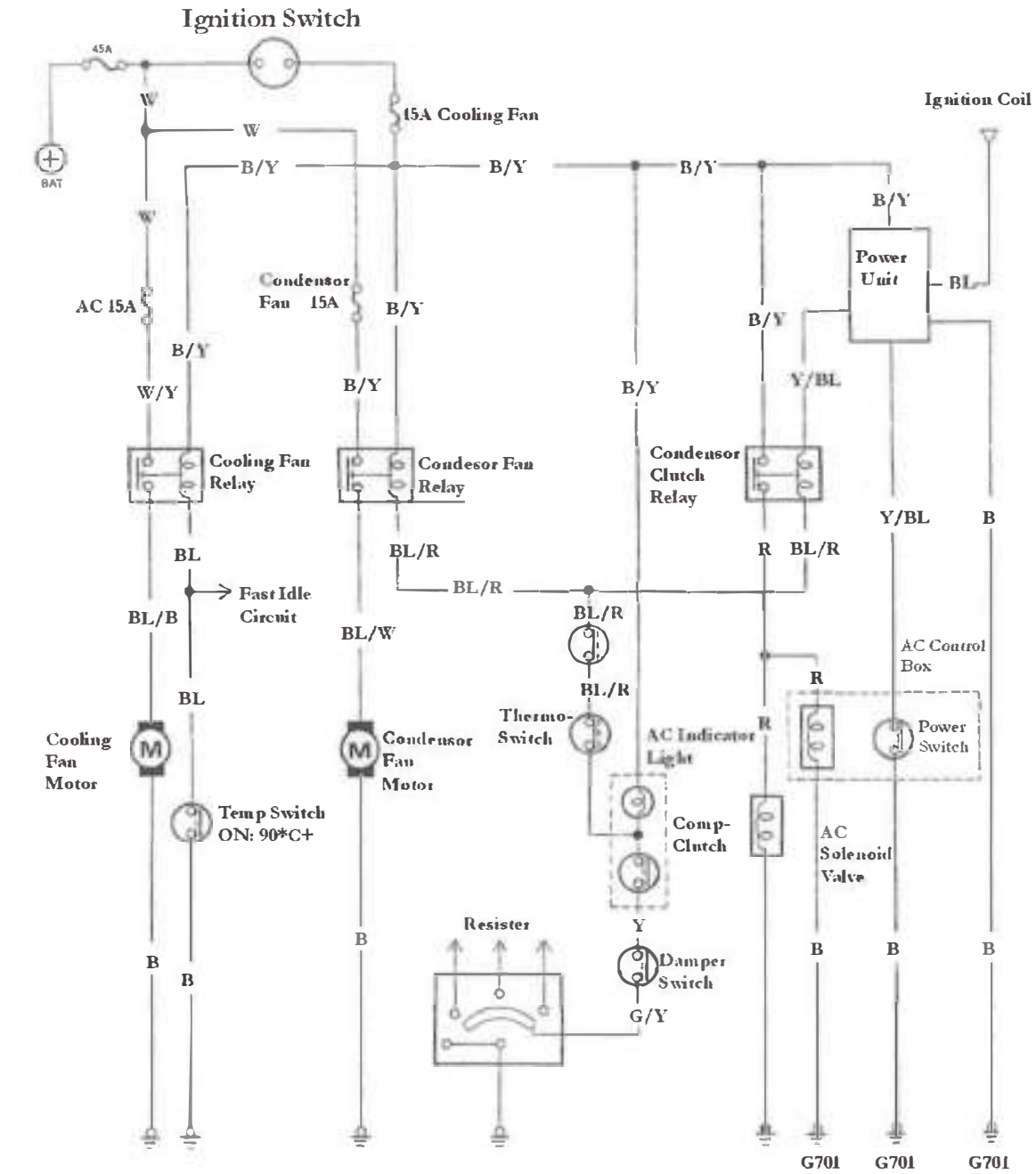


AC Schematic Diagram Van Type 2

Van Type 2

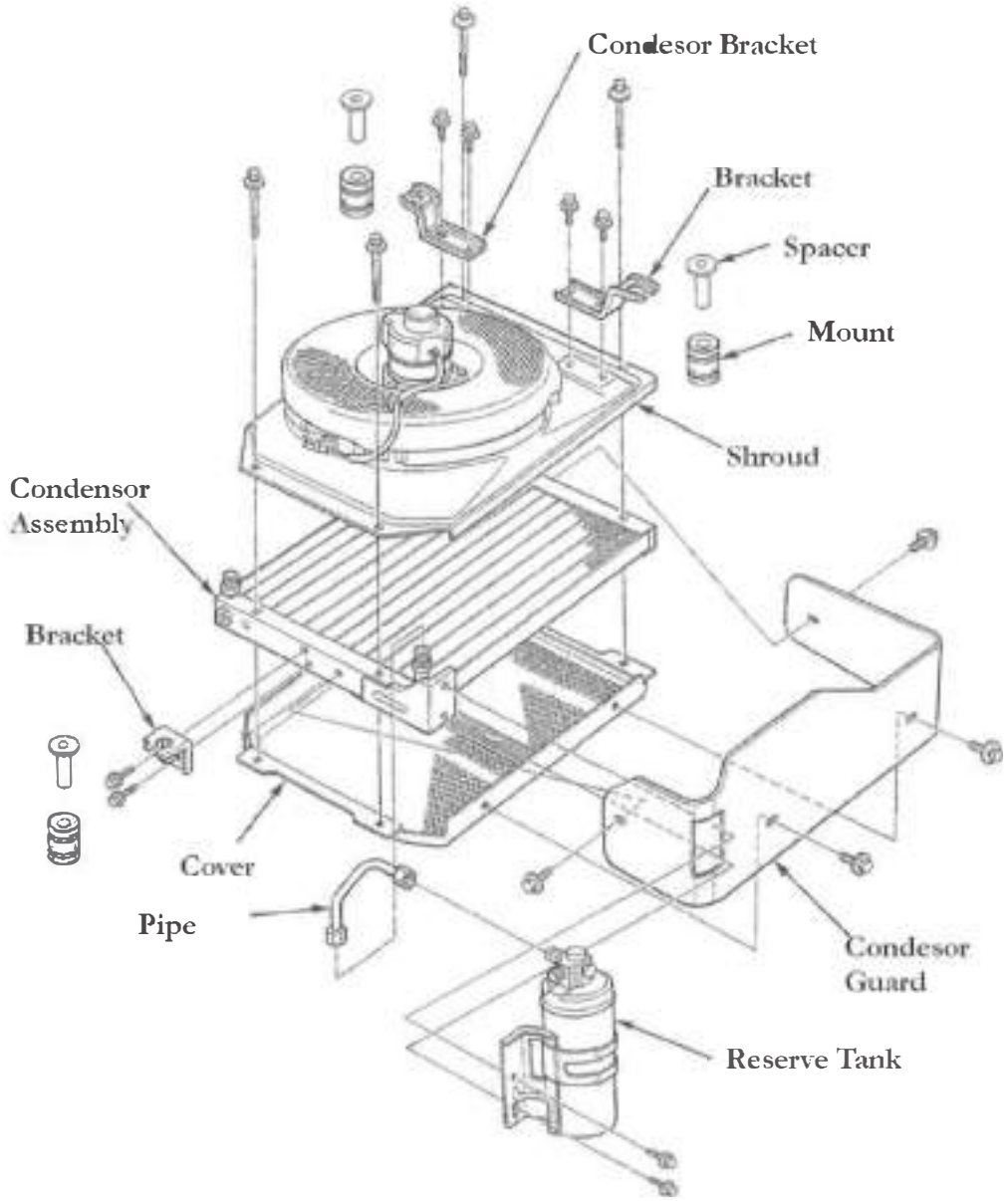


AC Circuit Diagram



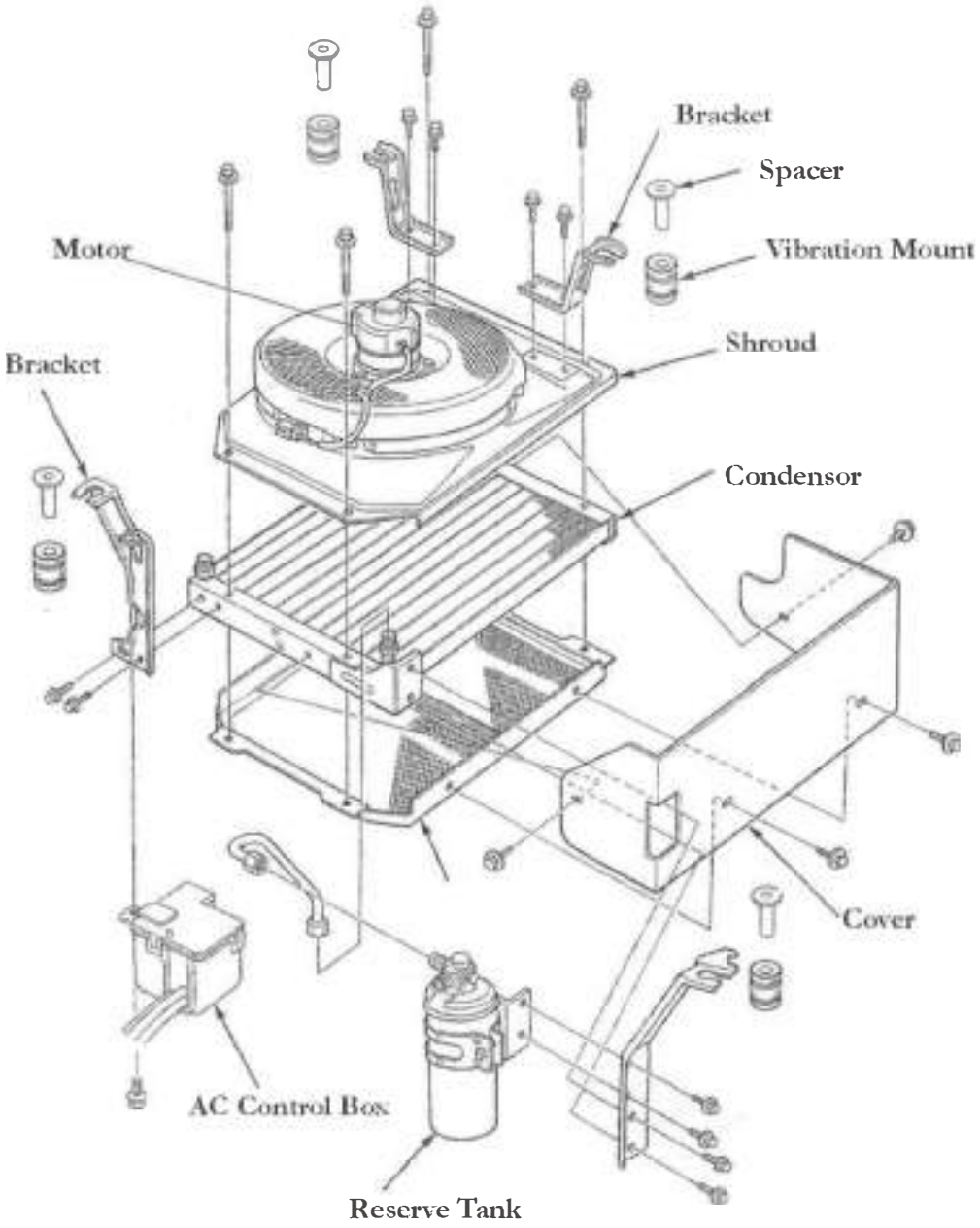
Condensor Scematic Van

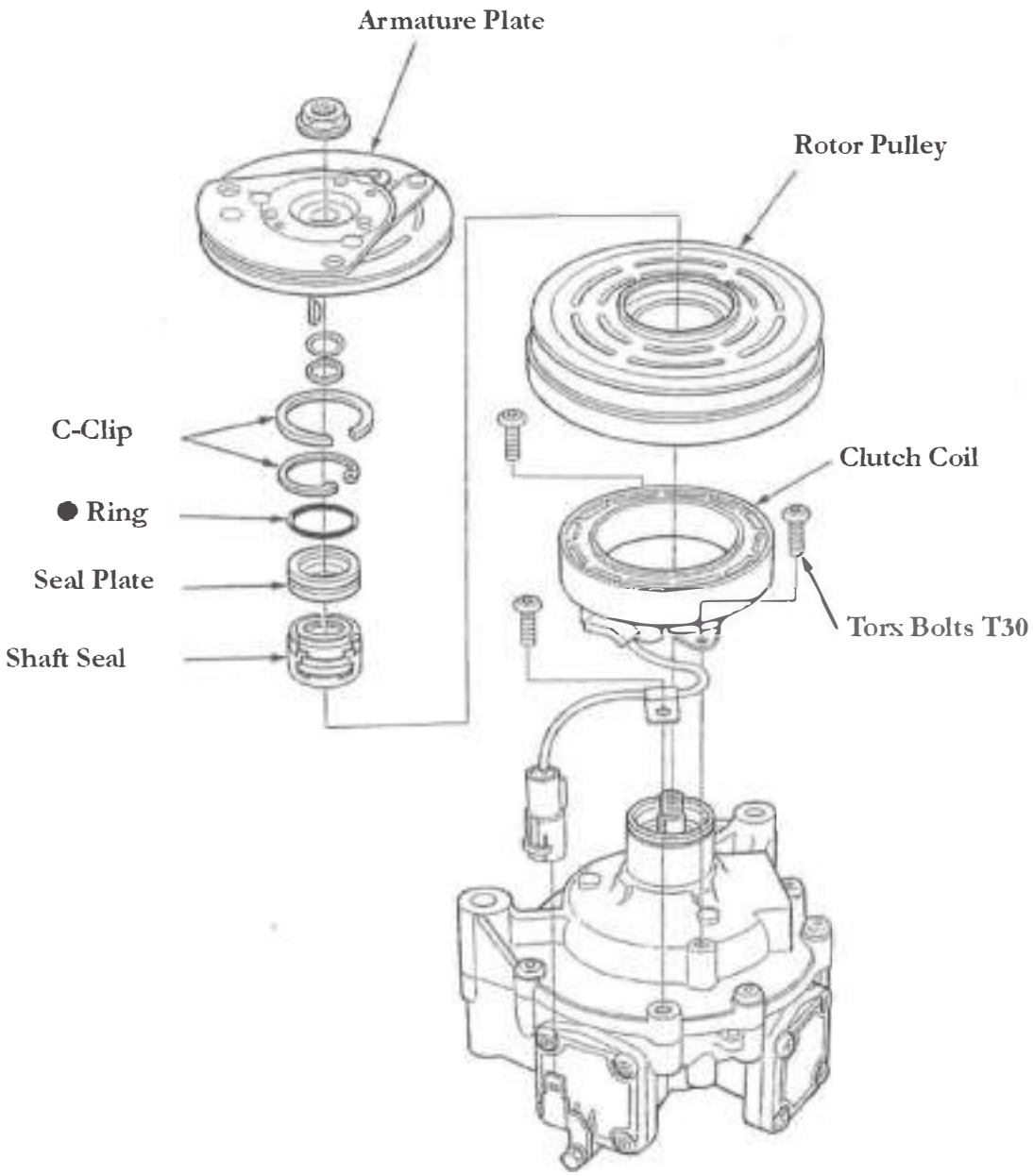
Van



Condensor Schematic Truck

Truck





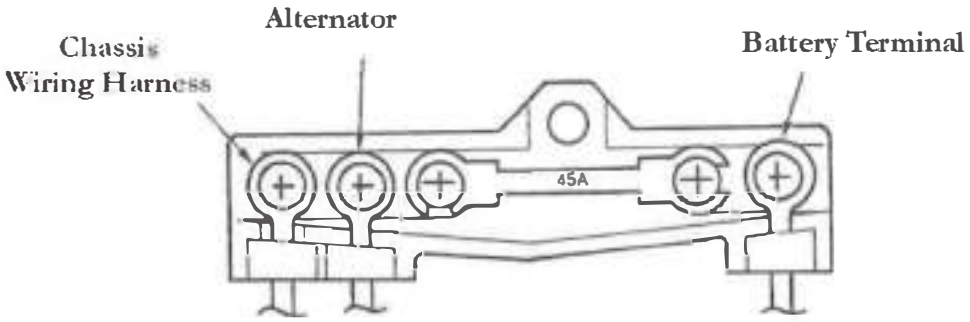
Chapter 13

Fuse and Relay Information

- Main Fuse Block 45A
- Fuse Box Universal Truck-Van Including A/C Vehicle
- Relay Locater

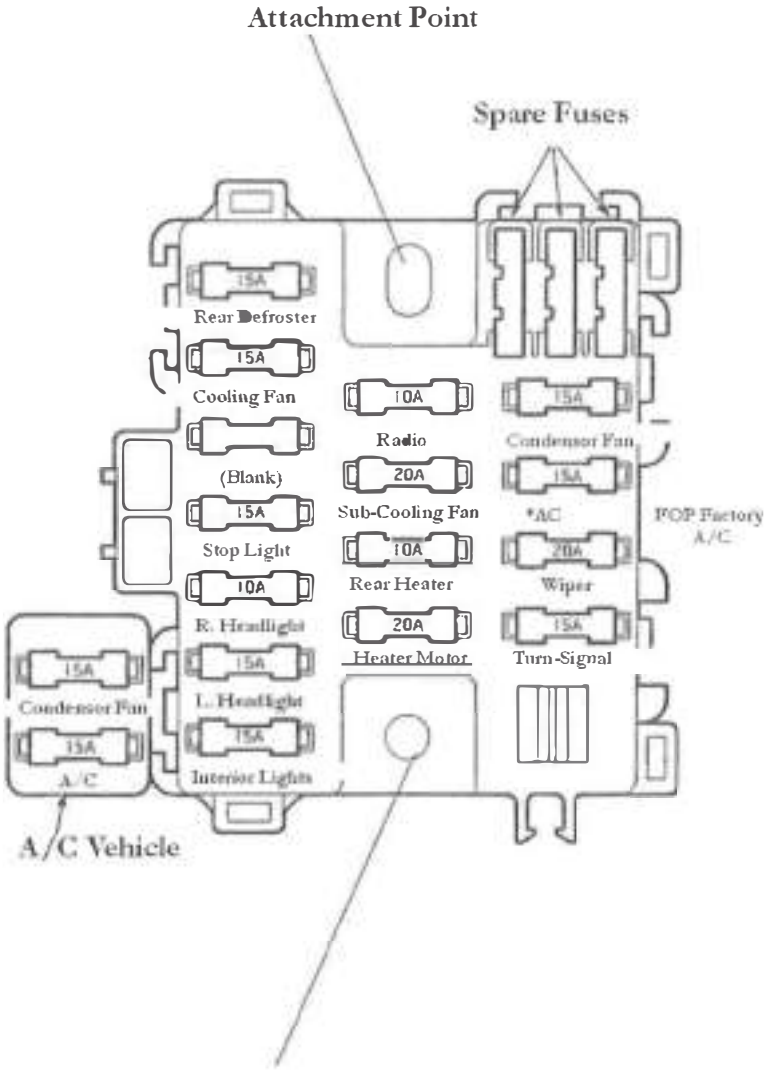
11. Idle Control Unit (AT)
12. Wiper Control
13. Turn Signal
14. Sub-Cooling Relays
15. Chime
16. AT Interlock
17. A/C Compressor
18. Radiator Fan
19. Condenser Fan
20. A/C Power Control Unit

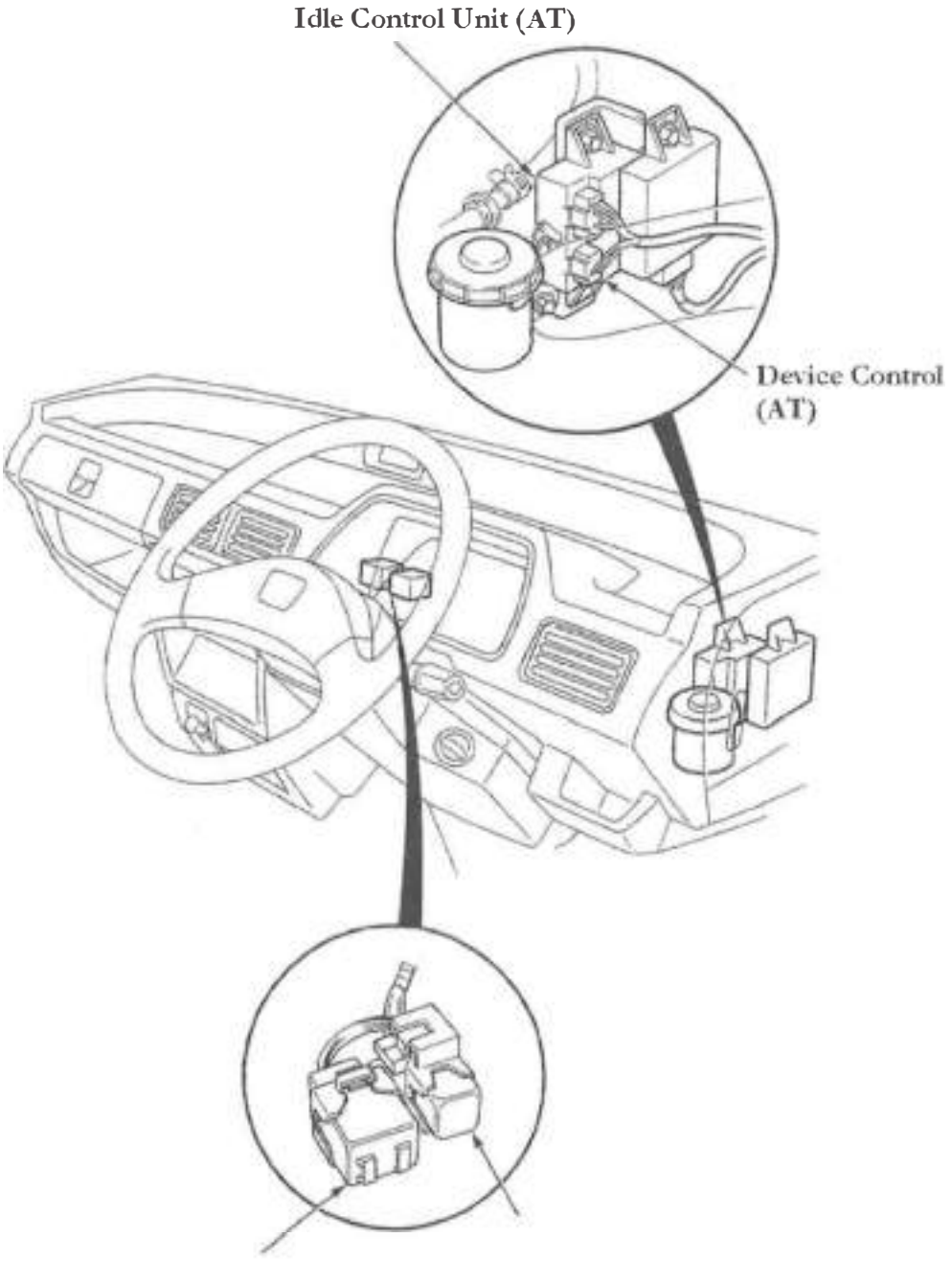
Main Fuse Block



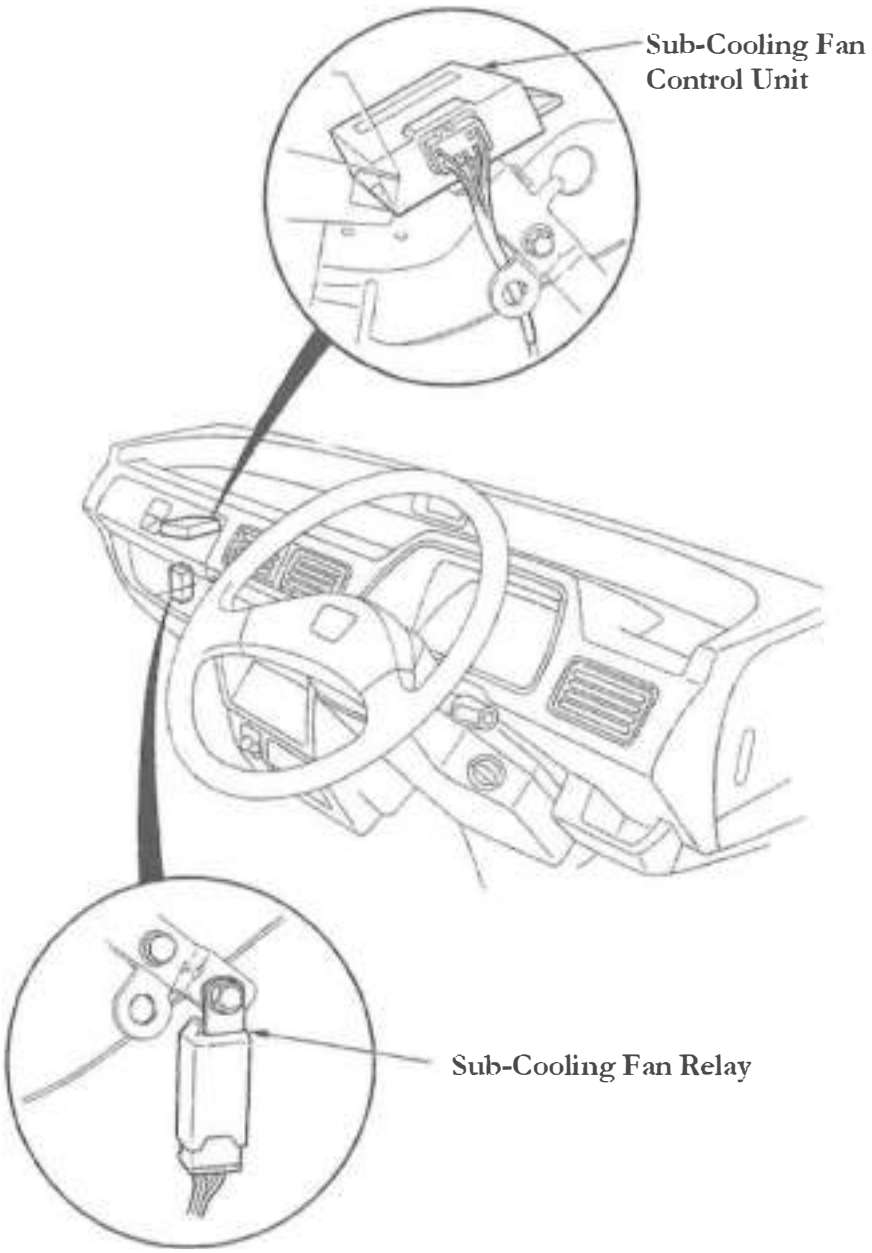
Fuse Box

Note: Slight Differences Between Models Possible. Check Owners Manual Per Vehicle Specific & Dealer Options Attached



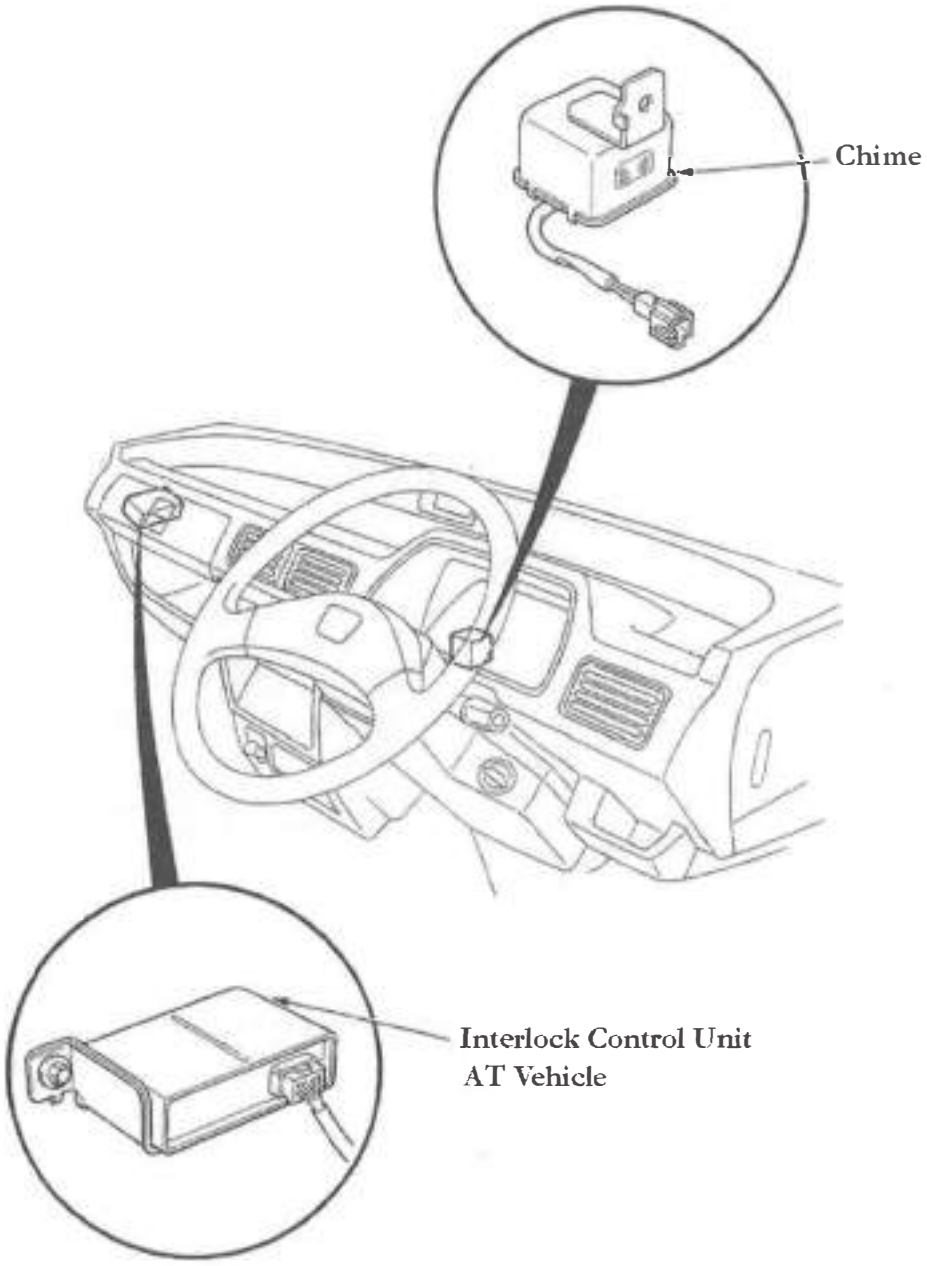


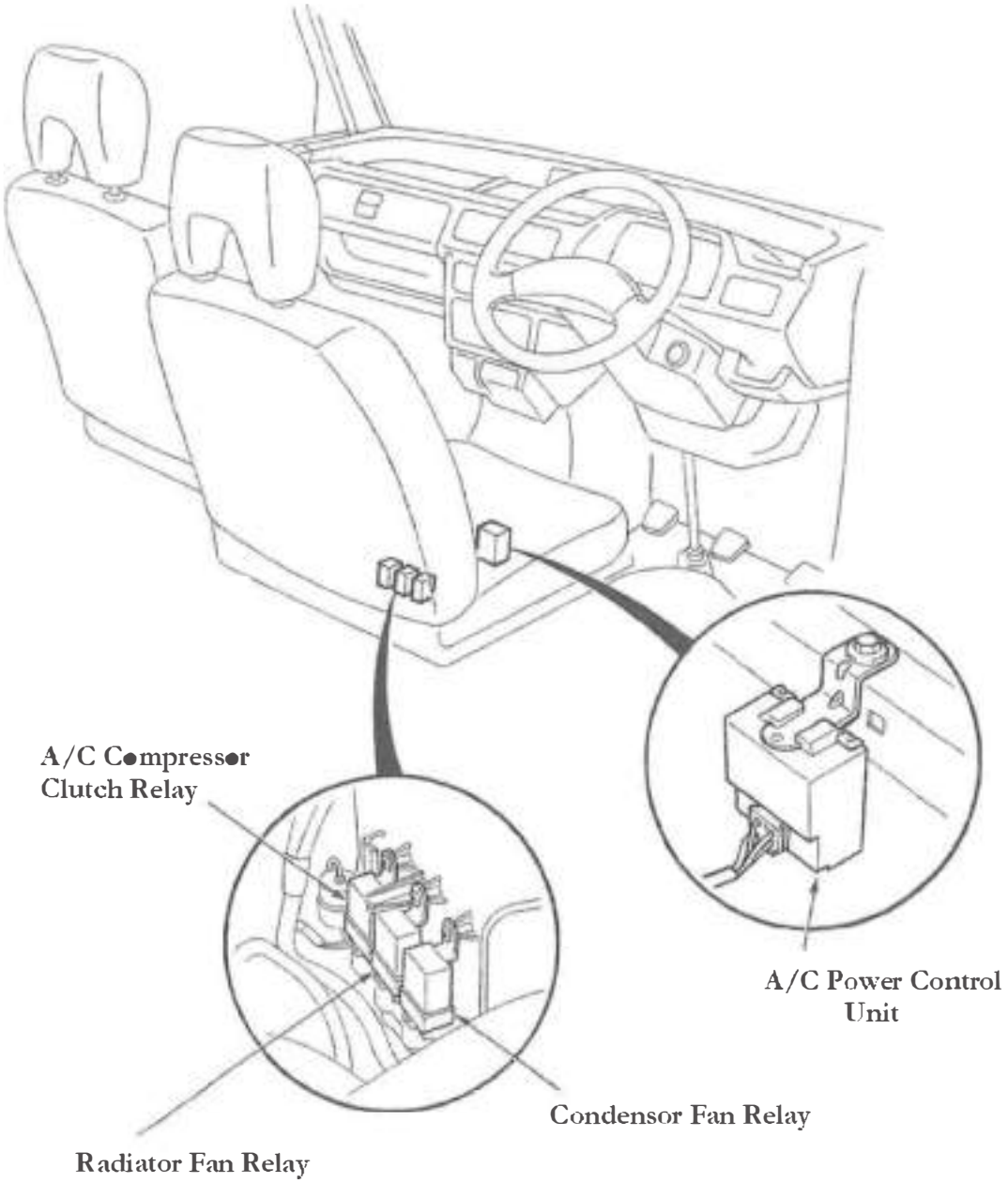
Sub-Cooling Fan Relay



Relay Control Unit

AT Vehicle





Thank You!

Please check for our other fine publications on Japanese Vehicles. We offer other information on the following:

Suzuki
Honda
Daihatsu
Subaru
Mitsubishi
Toyota
Nissan
Mazda
Isuzu
Others

For further information visit our website at www.yokohamamotors.com
Or email to info@yokohamamotrs.com

On-Line Parts for K-Trucks & Vans

www.yokohamamotors.net

Made in the USA
Middletown, DE
03 March 2020

HONDA English Factory Service Manual

Over 230 Pages Packed Full of Data & Diagrams!

Specifications & Body Schematics
Service Data Specifications
General Maintenance & Tune-Up
Engine Cooling System
Engine Overhaul
Fuel system & Emission Control
Clutch Replacement
Driveshaft & Axels 2WD & 4WD
Steering & Suspension System
Brake System
Starter & Alternator System
Heater & A/C
Fuse & Relay
Much More!

HONDA SERIES

Carbureted Vehicles
660cc Engine
E07A

ACTY TRUCK
ACTY VAN

2WD & 4WD
1989~1997 Models
Series Models
V-HA3
V-HA4
V-HH3
V-HH4

ISBN 978-0-557-02799-6
90000
9 780557 027996

Published by LuLu: Reatil Price $69.95